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**TABLE OF CONTENTS ON LAST PAGE OF READING.*****Our Protest Against Radicalism.***

**F**OR the first time in thirty years an issue of this journal appears more than a month late. This was our protest against contract breaking and Soviet rule. We thank our subscribers and advertisers, who, without exception, stood with us throughout the printers' strike.

**SUBSTITUTING BANK DEPOSITS FOR PAY ENVELOPES.**

**M**ANY EFFECTIVE METHODS of promoting thrift among wage earners have been proposed, but none has more to recommend it than the suggestion that large employers of labor abolish the pay envelope in favor of the bank deposit. According to the plan, each employe would have an account in the firm's bank, to which the amount of his wages would be credited every week, thus getting his total earnings into the bank at the start. From this account he could draw as needed for current expenses, the balance remaining on deposit at interest. Personal pride would thus be stimulated and an inspiration provided to increase the balance every week.

The scheme would appeal to those who had learned through five Liberty Loan drives that the banks are their good friends, and it would mitigate hostility toward banks on the part of others who have never made use of them. Not only would annoyance and waste of time in the long file at the pay window be eliminated, but accounting would be facilitated, and employer and employe alike would benefit through a greater sense of dignity and security than the workingman has ever known.

**THE RETURN OF THE BICYCLE.**

**A**MONG MOTORISTS and others who have occasion to observe city streets and country highways closely there is no doubt that the bicycle is coming back. And its return is no transient college girl's whim, for men and women, boys and girls are riding wheels for reasons that bid fair to last. Chief among these are the death of street railways in small towns and sparsely settled communities and the high fares collected on the trolley lines remaining in business. Secondary reasons quite apart from necessity and economy are the pleasures of bicycling and its benefits as a healthful outdoor exercise.

When the bicycle went out of general use several years ago there were few good roads outside of cities, and those were monopolized by automobiles then just coming into popularity. In contact with the oil used on macadam roads the bicycle tires of those days quickly softened, blistered and blew out. Moreover, the salutary law requiring lights on every vehicle at night was then a discouraging inconvenience. Bicycling became dangerous, expensive and troublesome, and lost favor both as a recreation and a mode of locomotion.

But wider and better roads have become the rule, "oilproof" tires have honestly earned their name, and electricity has eliminated the bicycle lamp nuisance. Bicycles themselves have been improved. All the advantages that first gave the bicycle its hold on the public are again as great as before, and the public is responding to these common sense appeals. Indeed, the manufacture of bicycle tires again promises to surpass its highest past records.

**MORE FREE PORTS NEEDED.**

**C**ONGRESS is belatedly opening its eyes to the necessity of more free ports in the United States. The Administration will probably recommend the passage of a bill creating them. A free port is an area set aside where goods imported from abroad may be stored without customs while awaiting reexportation or other distribution, and, if required here, taxed according to schedule. Such an area is exempt from all the red tape of customs surveillance, bonded warehouses, bonded manufacturing plants, etc., and the goods so brought in may be mixed and repacked, and reexported with system

and dispatch. London has had one for years, and as a result half our imports from England were products of other lands, brought first to the British free port, then resold. As a result, the United States, the greatest user of rubber in the world, got most of this product through England, where the price was set and we paid it, plus the freight.

#### UTILITY OF THE RUBBER HEEL.

**A**LTHOUGH THE RUBBER HEEL has been on the market for many years, its utility as compared to the leather heel is only recently admitted. The sale has now run into millions of pairs, and popular prices at retail range all the way from a dime to 50 cents a pair.

Combining all the resisting qualities of the best leather, a rubber heel has the advantage of being resilient, is not cut away as readily as the leather heel on concrete or gravel, is noiseless and saves one from the nerve-tearing jars at every step.

A special pair of rubber heels was recently made for experimental purposes and after being worn for six months were still in good condition. The cost was 75 cents, and on this account they would not be popular as the cost attached would be \$1 a pair. Even at that price they might be more economical than leather heels.

#### PLANTATION SHARE PROFITS.

**N**OTWITHSTANDING the continued surplus and low price of crude rubber, British investors still find rubber shares highly profitable. Ample evidence of this is to be seen in the annual reports of well-established plantation companies. For example, the Vallambrosa Rubber Co., Limited, one of the pioneer plantations in Malaya, realized a gross average price of 44½ cents per pound for the total 1918 crop as against 48 cents the previous year, while the "all in" cost of production was 21½ cents per pound as against 23 cents the previous year. In other words, the net profits still remain a trifle above 100 per cent and have enabled the directors to pay an *ad interim* dividend of 25 per cent and to recommend a final dividend of 37½ per cent, making the handsome total of 62½ per cent for the year while still ensuring adequate working capital and an ample reserve.

Doubtless the days of better than 200 per cent yearly earnings, which created a sensation just before the war, will never return, and perhaps some of the younger companies will never even reach 100 per cent dividends, but so long as present conditions continue plantation shareholders have nothing to complain of. By comparison the earnings from rubber manufacturing stocks are a mere pittance. Henceforth, however, demand seems unlikely to exceed supply, and eventually crude rubber may be produced on a margin of profit comparable with that on sugar and similar agricultural necessities of life.

#### CHINA YEARNS FOR RUBBER FACTORIES.

**C**HINA now being more or less in the limelight its possibilities as a field for rubber manufacture are not being overlooked. British and American tire manufacturers already maintain small vulcanizing plants there where the repairing of motor car tires is done efficiently. However, until Chinese roads are put into better shape there seems to be no reason to expect a great expansion in the automobile market outside the principal cities. The jinrikishas (the popular vehicle for the local transportation of passengers) are practically all equipped with pneumatic tires, Peking alone having 15,000 in service. But the outlook for rubber footwear manufacture is large, if some enterprising firm supplies the right kind of shoes. The Chinese shoes are made of cloth, good enough for dry weather, but very uncomfortable in the rainy season. About \$500,000 worth of rubber goods are imported into China annually. With plenty of cheap labor and a vast crude rubber supply near at hand, rubber factories are bound to come in time.

#### GERMANY REVOLUTIONIZES RECLAIMING?

**A**T LEAST that is the claim of the company owning the Runge and similar processes. A cursory view of all of the solvent processes, German, British, French and American, however, does not bear out the claim.

No solvent process adds value to the rubber extracted. In fact the reverse is true. As for valuable by-products they are few. The most important is the fabric. This can be used to a limited degree as shoddy in mats and floor covering, or as fabric in tire accessories, repair and rebuilding. Where rubber and fabric are plentiful and prices normal the solvent process can hardly compete with existing standard reclaiming processes. The German reclaimer is evidently still living in an atmosphere of blockade scarcity and high prices.

THE FIRST AFTER THE WAR NUMBER OF THAT VALUABLE technical journal the "Gummi-Zeitung," dated July 19, 1919, has been received. It opens with an article rejoicing that peace has been declared and it takes the ground that it is no use to go into the why and wherefore of Germany's collapse; facts as they are must be faced and every effort made to upraise Germany again. The way to accomplish this is to work and to trust to the future. The blockade is over, commerce is free once more, peace and the tasks that peace imposes are at hand. Set to work and while working keep thinking: "Germany and the German people must become once more what they were."

FRESH ATTENTION IS CALLED TO THE INCREASED USE OF non-skid tires on motorcycles and the increased use of this vehicle as a delivery car on account of its qualities as a time and money saver in the handling of light parcels. It means more tires and still more.

## An Examination of German Synthetic Rubber.

By Lothar E. Weber, Ph. D.

THE SYNTHESIS OF RUBBER has always been a topic of interest to the rubber industry. This interest probably reached a maximum in the summer of 1912, when the experimental results of Drs. Perkin and Hofmann were laid before the chemical world. Rubber had been synthesized as a test tube experiment by numerous investigators in the course of the previous twenty years, but these two men, the respective leaders of independent groups of English and German scientists, were undoubtedly the first to produce synthetic rubber on something more than an academic scale.

The coming of the war had a marked influence on these investigations. The possibilities of a rubber shortage in England being remote, her scientists naturally turned to the solution of more pressing problems. In Germany, however, the rubber situation became acute, even in the early months of the war. Realizing as she did the importance of rubber as a secondary instrument of warfare, it was but natural that she should make a great effort to effect its synthesis, being amply provided with the greatest incentive for inventive research, namely, necessity. One has only to recall the almost humorous methods of petty smuggling to which she resorted, to realize her pressing needs for crude rubber. It is to be expected, then, that she should have made great strides in the commercial development of the synthetic product.

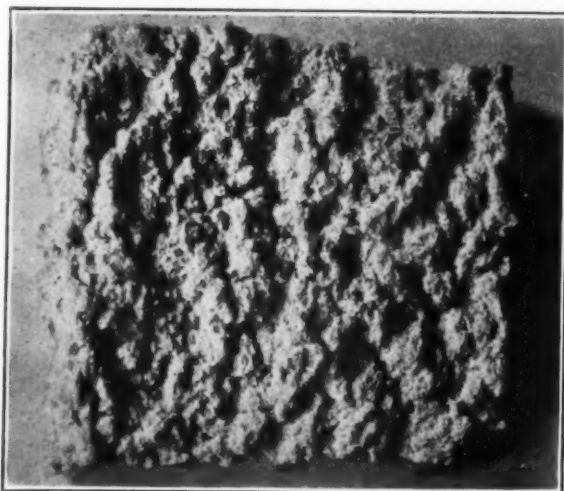
The four samples of synthetic rubber, which the Editor of THE INDIA RUBBER WORLD obtained from Germany and submitted to the writer, exhibited a striking resemblance to natural crude rubber. Three of the samples were intended for the manufacture of soft rubber goods and the fourth for hard rubber. The first three named took the form of crêpe, about one-half-inch in

less fibrous, and could be disintegrated without great difficulty. The dark sample was highly resistant in this respect, much more so than an average brown crêpe, in fact, its behavior was almost characteristic of an admixture of crude and reclaimed rubber.

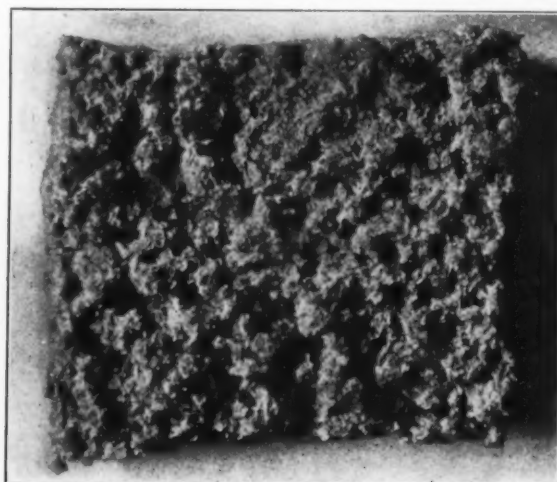
The light-colored sample showed scarcely any indication of tackiness. This condition was somewhat more apparent in the case of the pinkish sample, chiefly on account of some small viscid globules on the surface of the rubber.

The fourth sample, which was intended for hard rubber, resembled a soft art-gum eraser in color and texture. Although the sample was somewhat spongy, it returned to its original shape rather slowly after compression. It was a trifle sticky to the touch, but by no means tacky. Black combs said to have been made from this rubber had the characteristic black finish and high gloss, which is observed in the highest grade of hard rubber.

Little is known as to the method of preparation of the samples. It is reasonable to suppose, however, that they were produced at the large dye works of Bayer, at Leverkusen. The method employed at this factory for synthetic rubber is to use acetone as a raw material, and by means of aluminum to convert it into a product known as pinacone. The pinacone is then converted into methyl-butadiene, a substance bearing a very close chemical relationship to isoprene. This substance will be recognized as having always been prominently mentioned in connection with the synthesis of rubber. The methyl-butadiene is a thin liquid of low boiling-point, and by the chemical process of polymerization, is converted into synthetic rubber. According to Lieutenant-Colonel J. F. Norris,<sup>1</sup> the polymerization process requires from



LIGHT SYNTHETIC CRÊPE FOR SOFT RUBBER GOODS.



MEDIUM SYNTHETIC CRÊPE FOR SOFT RUBBER GOODS.

thickness. Their color ranged from a reddish-orange, through a pinkish-brown, to that of the characteristic dark-brown. In fact, the last-named sample bore a striking resemblance to a thick brown crêpe. The sample of pinkish-brown color had very much the appearance of washed Massai. The light sample was somewhat more reddish than first crêpe, as we know it; but otherwise it was of excellent appearance.

All of these rubbers possessed considerable toughness and elasticity. The lightest and the darkest were apparently the strongest, and after stretching resumed more equally their normal shape and size. The pinkish sample had considerable strength, but was

four to six months. It is carried out at a temperature of 60 degrees C. The product thus obtained is technically referred to as methyl rubber.

The chemical analyses of the four samples were as follows:

	No. 1	No. 2	No. 3	No. 4
	Per Cent.	Per Cent.	Per Cent.	Per Cent.
Acetone extract .....	2.56	1.95	3.82	1.59
Mineral matter .....	0.02	0.15	0.09	0.09
Nitrogen .....	0.12	0.06	0.16	0.07

The acetone extracts are all surprisingly low. They were of a brownish color and of a hard resinous appearance. The nitrogen values are interesting and without doubt signify the presence of

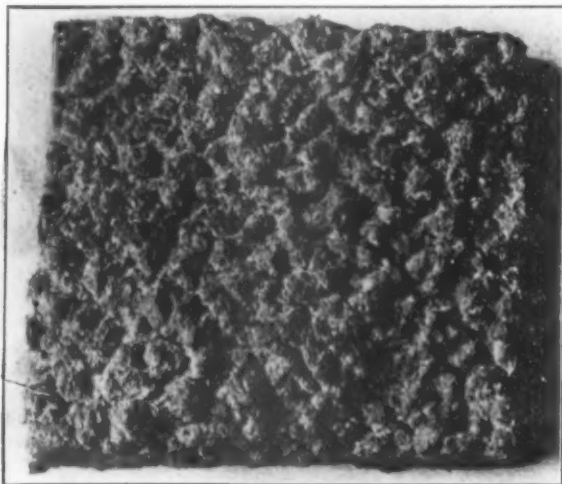
<sup>1</sup>"Journal of Industrial Engineering Chemistry," Volume 11, page 819.



an organic accelerator. In fact, it is rather probable that the acetone extract consisted in part of such accelerator. Owing to the smallness of the samples no attempt was made to identify the nature of the latter. It was clearly evident, however, that none of the organic bases that are in general usage in this country to-day for accelerating vulcanization had been employed. Probably the accelerator present was a piperidine derivative.

For the purpose of determining the physical properties of the synthetic products the following formula was employed:

	Parts.		Parts.
Rubber .....	50	Sulphur .....	5
Zinc .....	45	Hexamethylenamine .....	3/4



DARK SYNTHETIC CRÊPE FOR SOFT RUBBER GOODS.

The samples being so small, the three crêpes were blended together and used as a whole. When put on the mill they disintegrated and fell apart rather quickly. In the course of a few minutes, however, the particles began to agglomerate, and in due time assumed the familiar plastic condition of broken-down rubber. The mass differed from natural rubber in that, notwithstanding its plasticity, it was exceedingly tough and this toughness became more marked after the addition of a portion of the compounding ingredients. As the latter were added the toughness of the rubber continually increased, although its plasticity was such that the minerals were readily absorbed.

The mixture was vulcanized in a press for forty-five minutes at forty-five pounds. The physical tests obtained are tabulated below. For the sake of comparison, there is inserted the physical tests obtained from an average sample of first latex crêpe vulcanized in the same compound.

	Synthetic Rubber.	First Latex Crêpe.
Tensile strength .....	910 lbs.	2800 lbs.
Elongation at breaking point.....	750%	675%
Permanent set .....	25%	25%

In order to determine the aging properties of the synthetic rubber the vulcanized samples were subjected to a temperature of 150 degrees F. for seven days. The following results were obtained:

	Synthetic Rubber.	First Latex Crêpe.
Tensile strength .....	800 lbs.	2230 lbs.
Elongation at breaking point.....	650%	650%
Permanent set .....	25%	25%

The results of the physical tests do not compare very favorably with those of a high-grade natural rubber. They are, in fact, more comparable to the properties of an inferior brown crêpe. The whole general appearance of the vulcanized synthetic rubber, and especially its flabby and lifeless condition, reminded one very strikingly of vulcanized brown crêpe.

It will naturally be asked whether this method of synthesizing rubber is capable of large scale technical application. In other words, is there any reasonable possibility of synthetic rubber becoming the competitor of the products of the plantations?

Prophecy is always dangerous and frequently idle. On the basis of the above samples, however, closely confirmed by rumor and hearsay, very big improvements must still be made in the synthetic product in order that it may compete in quality with natural rubber. It is not fair to assume that the scientific possibilities of improving and cheapening plantation rubber are just as great as the scientific possibilities of the present art of synthesizing rubber?



LIGHT SYNTHETIC BLOCK RUBBER FOR HARD RUBBER GOODS.

The complete victory of synthetic indigo over the natural dye-stuff would have taken a different course had the indigo plantations been as scientifically operated as are the rubber plantations to-day.

It cannot be denied that the production of this rubber is an astounding chemical accomplishment. It may be said, without much danger of contradiction, to represent the climax of modern synthetic chemistry, in that for the first time it has been possible to produce upon a commercial scale a representative member of the group of enormously complex substances known as colloids. As such it marks the beginning of a new era in chemical synthesis. It is very problematical, however, whether the benefits of this discovery will accrue directly to the rubber industry. Chemistry as a whole becomes enriched and especially that branch of chemistry dealing with colloids. It has become generally recognized during recent years that nearly all biological processes are colloidal in their nature, and it is in the further study and synthesis of colloids that the knowledge gained from the synthesis of rubber should receive its greatest application.

#### COLONEL OSTERRIETH GREETES HIS KING.

Conspicuous among those prominent in the greeting of the Belgian King and Queen in New York City early in October was the commanding figure of Colonel Leon Osterrieth, military attaché of the Belgian Embassy. Colonel Osterrieth, it will be recalled, was a crude rubber merchant in Antwerp and owns rubber plantations in Java and Malaya. He was the delegate for Belgium at the International Rubber and Allied Trades Expositions of 1911 and 1914 and was on his way to the Rubber Congress in Java when war was declared in 1914. After gallant service in the Belgian Army he came to America with the Belgian Mission in 1917 and is now stationed at Washington.

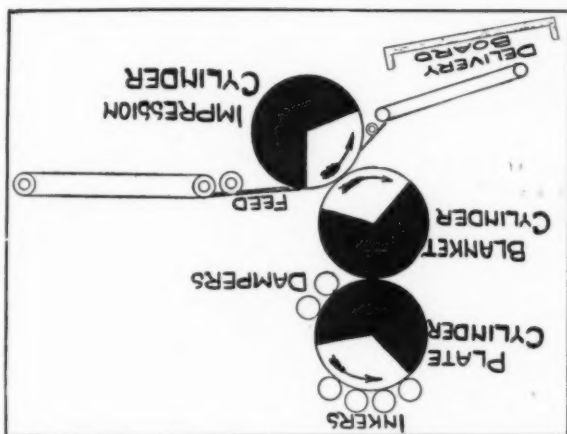


## Rubber Instead of Typesetting.

**R**UBBER instead of typesetting is not a mere possibility, but a practical reality. In printers' circles the process has been known quite a while, but somehow it never attracted very much attention and was comparatively little used. Those who saw possibilities in the process admitted that something or other would have to happen, something quite unforeseen probably, before wider circles would become interested. Then, quite recently the unforeseen happened. A group of compositors went on a "vacation," and tied up the New York publishing industry for eight weeks. Meanwhile a few men started thinking quite hard, and this thinking bore fruit, various methods of doing away with typesetting being tried. In one of these processes rubber plays an essential part.

A well-known New York publisher has just published a book, the whole of which has been produced from photographs transferred to rubber without any typesetting at all. It is the first book ever issued in this manner in the whole history of publishing. The work was done for the publishers by one of the many offset printing firms of New York City. Before describing the process by which the book was produced, however, we will briefly outline the history of offset press work.

The first actual tin-plate rotary was conceived in 1903 and was exhibited by George Mann & Co. in 1909 at the printing exhibition in London. Shortly after this, Ira W. Rubel chanced to be in a lithographic machine room, when the operator failed to feed a sheet of paper, the impression taking place on the rubber blanket. A few seconds later, on the back of the next sheet fed to the press, a better impression was found than the one on the front of the sheet made by the metal. The operator probably soon forgot the occurrence, but not Ira W. Rubel.

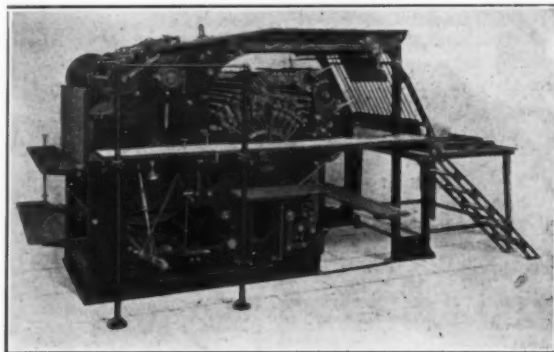


THE RUBEL TYPE ROTARY OFFSET MACHINE.

Two years later his machine embodying the new use for rubber was on the market. Offset press work was completely revolutionized by the new machine, and it is a matter for regret that Mr. Rubel only survived its introduction by about two years. Since that time various machines have been invented; they are associated with the names of Mann, Harris, Waite, Potter, Scott, Hall, Fuchs, Lang, Killogg, Bentley, Jackson, Saville and others in the United States and Great Britain.

Offset printing has been used for a dozen years, more or less. Letter-heads, illustrations and a few other things have been quite extensively produced by the process. And many firms have done excellent work along these lines. But, as already stated, very

few men thought that offset work would ever compete with general typography, ordinary printing was so well established, it could be done so satisfactorily and at fairly reasonable rates, there being no lack of compositors, while, on the other hand, offset work demanded highly skilled men, of whom there were not



MANN PATENT TWO-COLOR AND PERFECTING PRESS.

THIS MACHINE WILL PRINT TWO COLORS SIMULTANEOUSLY ON ONE SIDE OF THE SHEET, OR ONE COLOR ON EACH OF THE TWO SIDES AT THE SAME TIME.

many. It was indispensable to do the right thing at the right moment; a slight oversight might result in a poor job. Besides which, in the early days the stone used gave a good deal of trouble; it frequently broke and was expensive.

In the present-day rotary machines stone is replaced by aluminum or zinc. Mr. Rubel, if he were alive to-day, would hardly have an opportunity to catch a feeder failing to feed a sheet, as most of the larger machines have automatic feeders. All the offset machines produce prints as set-offs instead of doing so by direct printing. The last impression can be made as clear and distinct as the first. There are zinc plates in the market made by manufacturers by more or less secret processes, but many firms doing offset printing make their own plates at less than half the cost.

One advantage of the offset process is that any kind of paper can be used advantageously. Work on cards succeeds equally well, while unusually pleasing effects have been produced on celluloid, as no damping of any stock is necessary. It has even been found possible to turn out the cheaper kind of little flags, which are so largely sold at parades and public celebrations, by the use of one of the existing offset presses.

Absolutely high-grade color work can be done by the process, even nine-color work in perfect blending has been exhibited. Salesmen of the various machines have naturally praised them very highly and yet purchasers of the machines have frequently been disappointed by the quality of the work turned out by their men, thoughtlessly blaming the machines and the salesmen.

The machine operators must "know how" and take pride in their work. The machines respond to skilful control and fine work is the result. First-class operators earn first-class incomes, which are gladly paid by their employers in this line of business. It is the ability of offset press workers and their willingness to use their ability that gives value to the machines. When the work turned out is poor, the operators are probably to blame, though in some cases other factors enter into consideration.

One very striking difference between ordinary printing presses and offset presses is that on the latter copper plate engraving, reading matter, half-tone work, etc., can be printed at one and the same time. At present, reading matter produced on offset

machines without the aid of printer's type offers one drawback which is very noticeable, and that is the unevenness with which the lines end. The reason for that, however, is that the text is typewritten on ordinary typewriters, and then photographed. The lines end, therefore, as all typewritten matter ends, very irregularly. The experimental departments of all the greater typewriter companies are now hard at work seeking a way to make lines end evenly, and one of these days American ingenuity will solve the problem. Offset work will then find new fields of usefulness which it has up to now been quite unable to enter with any notable success.

Offset work is cheaper than ordinary typographical work, and can be turned out more rapidly. One of the reasons for greater economy is the difference in the time necessary for the make-ready. In ordinary typographical work the make-ready frequently takes up hours. In offset work that which takes the place of the make-ready requires an almost negligible amount of time, with a corresponding saving of money.

There are four stages in the execution of the work which can be described so that the reader will fully understand the process.

1.—The text, which has been carefully typewritten on new machines to insure equal pressure of each letter on the paper and to guarantee perfect alignment, is photographed.

2.—An ordinary zinc line plate is made from the photographic glass negative thus obtained, the negative image being reversed to a positive image in the course of the transfer after the customary manner of photographic process work.

3.—The zinc plate, ordinarily with several others, is arranged in a form as usual and put in the press, where it is inked in the customary manner by rollers, and an ink impression of the plate is transferred to a rubber covered metal cylinder, this impression being negative in the sense that the type is reversed left for right and reads backwards.

4.—The operation of the press is so timed and arranged that a sheet of paper is then fed through it and the ink impression transferred by direct contact from the rubber blanket on the cylinder to the surface of the paper, where it becomes a positive impression reading from left to right.

After use, the rubber-covered cylinder is very easily cleaned, and the surface can be used again and again, until the rubber is worn out. The rubber blanket may last less than a month or over two months, depending on the amount of work done, and particularly on the kind of stock used. Coarse, hard paper will naturally wear out the rubber sheet quicker than other kinds of stock.

When black ink is used, from 3000 to 4000 copies per hour can be run off a good machine. Color work is naturally done much more slowly. The ink used for offset work dries very quickly, and the stock, as already mentioned, is never dampened, so that the sheets coming off the press can be almost immediately folded into booklets, books, etc., and be delivered to the customer. Sheets coming off typographical presses must be allowed to dry for a considerable while before they can be folded or handled in any way.

The machines used to-day for offset work are not perfect, but manufacturers will now doubtless feel encouraged to remedy defects. The largely increased fields of sale now opening up offer possibilities of augmented profits sufficient to warrant considerable effort at improvements.

Rubber men will probably be interested in a few remarks on the rubber covering for the rollers, with which we will end our story.

The thickness and the degree of elasticity of the rubber blanket covering the cylinder are features that have demanded many and long-continued experiments. The entire blanket must be of absolutely uniform thickness, as the slightest defect in its uniformity renders the whole unfit for use.

The best printer's blanket for offset work has always been imported from Europe. Before the war, the best blanket, in small sizes, was made in Germany, but the Germans were utterly un-

able to succeed in the larger sizes, in which Great Britain has achieved preeminence, producing extremely fine printer's blankets up to 70 inches and even more in width. Before the war these imported blankets sold in the United States at \$4 a square yard. The price varies these days considerably but is, of course, much higher.

The expansion of offset printing in tropical and subtropical countries depends largely on the rubber chemist. Printer's blankets that give good results in New York or London may not give satisfaction in very hot or damp countries. These sensitive rubber blankets suffer from high temperatures combined with great atmospheric moisture.

Here is an interesting and lucrative field for the American rubber industry.

#### INTERESTING LETTERS FROM OUR READERS.

##### DESIRES TO SUPPLY ZINC SULPHIDE TO THE TRADE.

TO THE EDITOR OF THE INDIA RUBBER WORLD:

DEAR SIR:—A few days ago I was showing a sample of zinc sulphide to a subscriber to your magazine and a manufacturer of rubber goods. He was not using zinc sulphide himself but claimed that it is peculiarly adaptable to use in the rubber trade in the manufacture of particularly white goods, due to sulphur from the sulphide in some way reacting with the rubber.

We looked through a recent number of the magazine to find a quotation on zinc sulphide, which, he said, was formerly listed there. He then suggested my addressing you as the best authority on the wholesale market for zinc sulphide and as to who are using zinc sulphide now.

I hope that you may be able to furnish me this information, for I have a small plant for making pure zinc oxide in hundred-pound lots that can be immediately turned into a zinc sulphide plant, and can expand to a large plant should I find a large field for the product. This information would be most timely to me, and if there is a demand for zinc sulphide, will also be of value to your advertisers.

Awaiting this information and a reply from you, I am,

Yours most sincerely,

SAMUEL T. HALSTED.

163 Rubidoux avenue, Riverside, California.

##### SEASONS' SUPPLIES OF FICUS RUBBER.

TO THE EDITOR OF THE INDIA RUBBER WORLD:

DEAR SIR:—I would ask you to be so kind as to bring me in touch with a solid American factory (no dealers) which is willing to buy *Ficus* rubber in seasons' supplies of from 10,000 to 30,000 pounds. A sample of the same I will send for their approval the moment I receive the address. Only few estates in Java produce *Ficus* rubber, most of them cultivate *Hevea brasiliensis*, so there is here practically no market for this sort of rubber. Thanking you in anticipation,

Yours very respectfully,

J. REINTS BOK.

Soerabaya, F. M. S.

##### RUBBER GOODS FOR AUSTRIA AND SERBIA.

William Ford Upson has been appointed Trade Commissioner to Vienna by the Bureau of Foreign and Domestic Commerce, and at an early date will proceed to his post to conduct an investigation of general commercial and economic conditions in Austria and Serbia. Mr. Upson was an officer of the American Red Cross during the war and later the American delegate to the Inter-Allied Trade Commission at Vienna and is well informed regarding conditions there. Among the many things needed by Austria and Serbia which, in his opinion, America can best supply, are rubber goods, footwear, clothing, cotton oils and fats, petroleum and its products. American capital and business acumen along broad constructive lines will be required to establish business relations.

## Poisons in the Rubber Industry.

### The Rash Produced by Hexamethylene-Tetramine and a Means of Prevention.<sup>1</sup>

By Norman A. Shepard and Stanley Krall.

THOUGH THE OCCURRENCE OF A RASH among rubber workers has long been observed it is only recently, since the introduction of organic accelerators of vulcanization, that the skin eruption or dermatitis has been at all serious or prevalent. By 1917, however, the problem had become so general that the Rubber Section of the American Chemical Society requested its Committee on Organic Accelerators to investigate the toxic properties of the more commonly used accelerators. The report<sup>2</sup> of this committee which was presented in September, 1918, at the Cleveland meeting of the Society brought out the fact that most of the common accelerators had distinctly poisonous properties. The report covered aniline, paraphenylenediamine, thiocarbonyl, p-nitroso dimethylaniline and hexamethylene-tetramine; it emphasized the necessity of studying accelerators not only from the standpoint of the accelerating action but also as regards poisonous properties.

In the study of accelerators, the Firestone Research Laboratory has devoted much attention to the question of toxicity, with the purpose of finding an accelerator combining excellent acceleration with a minimum of toxic action. Knowing that many rubber companies are using hexamethylene-tetramine or "Urotropin," it was thought that a study of the toxicology of this substance would be of interest not only to ourselves, but also to those who are already using this accelerator. The investigation has been extended to cover the probable cause of its action and to find, if possible, an antidote or simple means of prevention.

The action of hexamethylene-tetramine was summarized in the Report of the Committee on Accelerators as follows:

**SYMPTOMS OF POISONING.**—Rash and inflammation of skin which has been in repeated contact with stock containing this material. In severe cases, blisters filled with watery fluid result.

**ANTIDOTE.**—Cleanliness and care in regard to clothing are the best preventatives. Change of occupation will cause the rash to disappear, leaving no permanent effects.

This description agrees closely with that taken from the United States Dispensatory<sup>3</sup> in which it is stated that, "Locally, hexamethylene-tetramine is mildly irritant and feebly antiseptic. A measles-like rash with much itching has been noticed after its continuous use."

In order to study the nature of the irritation ascribed to this accelerator, the tetramine was applied in powdered form and in water solution of various concentrations to different parts of the body. Five men from the Research Laboratory were selected for these tests and applications were made on the wrist, forearm, chest and thigh. These applications were repeated several times each day for several days, yet there was no irritation or indication of rash in any case and not even the slightest itching. Thinking that possibly the perspiration might function in the production of this rash, applications were made on the feet and even under the arm-pit, where the perspiration flows most freely. Again, no action could be observed. Even applications following a very hot bath, thoroughly opening the pores and causing a typical "sweat," resulted in no irritation whatsoever.

As a result of these negative experiments, it was decided to introduce this accelerator into a factory compound in order to study its effect under actual working conditions. The workmen handling this particular experimental stock were carefully observed. At the time this test was begun the weather was

quite cool and for some time no deleterious effect was observed. However, with the approach of warmer weather the action of hexamethylene-tetramine began to manifest itself. It usually appeared first as a rash on the wrist or forearm, and in many cases was confined to these parts. The action became more pronounced, however, when really warm weather arrived; not only the forearms, but also the face and neck became involved and to such an extent in certain cases that a large portion of the face was affected, especially around the eyes. In general the inflammation was confined to the exposed parts, though occasionally it appeared on the shoulders, legs and even across the stomach. There seemed, however, to be no tendency for this rash to spread to any great extent beyond the parts which actually came in contact with the stock; the cases on the face and neck probably resulted from contact with the hands.

The dermatitis produced by contact with the stocks containing hexamethylene-tetramine was identical with that described by Kratz<sup>4</sup> in an article on the "Control and Prevention of a Rash Among Rubber Factory Employees," though his paper mentions no particular accelerator or other substance as the cause of the rash. Quoting from this article, "The rash almost invariably the heat. This condition is closely followed by the appearance appears as a simple erythema, such as is generally attributed to of sac-containing eruptions or vesicles similar to those characteristic of ivy poisoning. These vesicles are quite small, seldom being larger than pin-heads and are grouped in varying arrangements, from being widely disseminated, to quite closely aggregated. They rarely retain their integrity for more than 48 hours, being broken by friction from the clothes or by the patients' rubbing and scratching, or, if this does not occur they soon become filled with a watery serum and rupture spontaneously in consequence of the exuded fluid."

The perspiration undoubtedly plays an important part in the production of this rash. It becomes almost epidemic with rise in temperature. Following a few hot or sultry days productive of profuse perspiration, a marked wave of rash will spread among the men handling the raw hexamethylene-tetramine stocks; a few cool days and it subsides, only to reappear again when the hot weather returns. This observation also agrees with that of Kratz, who writes, "Though the rash is most prevalent during hot weather, particularly in humid midsummer, it certainly cannot be attributed solely to the heat; nevertheless the abnormal perspiration produced by the heat undoubtedly does play a part in rendering the skin most tender and susceptible to infection. Throughout the factory the fundamental cause of the rash will probably be traced to the irritation produced by the careless handling of green stocks or liners."

On studying the situation closely for several months and during the hottest weather, a marked immunity to the action of the hexamethylene-tetramine was observed. Only a small percentage of those handling the stock was affected. One would find right next to an especially virulent case, men performing exactly the same operations and handling the same stock, absolutely free from any sign of irritation. This undoubtedly explains the negative results which were obtained in the laboratory when the strong solutions of hexamethylene-tetramine were first applied. In order to prove that the hexamethylene-tetramine was really responsible for the trouble, a patient was selected for experimentation from among those who had shown themselves susceptible to this rash. This patient had had the rash very

<sup>1</sup>Contribution from the Research Laboratory of the Firestone Tire & Rubber Co., Akron, Ohio.

<sup>2</sup>"Journal of Industrial and Engineering Chemistry," Volume 10, 1918, page 865; THE INDIA RUBBER WORLD, November 1, 1918, page 82.

<sup>3</sup>Fifteenth Edition, page 611; 20th Edition, page 545.

<sup>4</sup>THE INDIA RUBBER WORLD, Volume 57, 1917, page 145.



severely for nearly two months, the hands, wrists, forearms, face and neck all being involved. The part selected for the test with the concentrated accelerator was the arm above the elbow, where the skin was perfectly clear and where the patient said he had never had any rash. An application of a 50 per cent water solution of hexamethylene-tetramine was made by moistening six plies of sterile gauze bandage with the solution and securing it with bandage and adhesive tape. This method of application was selected to insure constant contact with the skin and at the same time protect the treated spot from contamination with other substances. In the course of twenty-four hours, an eruption developed on the treated surface having all the characteristics typical of the "rubber rash." The other arm above the elbow was similarly treated, with the same result at the end of twenty-four hours. During these tests the forearms, face and neck on which the patient had previously had the rash were clearing up showing that the rash above the elbow was not due to spreading from the forearms. No more applications were made for a period of eight days, at the end of which time the skin above the elbows had returned to its normal condition. Again, hexamethylene-tetramine was applied in 50 per cent solution and again the rash was reproduced above the elbows. Two other patients susceptible to rash were similarly treated with this 50 per cent solution; in both cases a rash was produced. All these tests were conducted while the weather was warm and the patients perspired freely while working. These results were so clean cut that they left little doubt as to the irritating action of hexamethylene-tetramine.

The absence of any rash, even on the hottest days, among those who handled the cured stock was very pronounced; as far as the writers are aware, not a single case was reported. In view of the recent work of Bedford and Scott on the "Reactions of Accelerators During Vulcanization,"<sup>10</sup> this is readily explained. These investigators have shown that hexamethylene-tetramine reacts with sulphur at the vulcanization temperature, forming among other things, hydrogen sulphide, carbon bisulphide, ammonia and a sulphocyanate.

In order to determine a suitable substance to use as a preventive, an explanation of the mechanism of the action of hexamethylene-tetramine was sought. As the occurrence of rash is closely associated with the excretion of perspiration, the possible chemical changes which might result from its action on hexamethylene-tetramine were investigated. According to Schamberg<sup>11</sup> the perspiration is normally acid; this has also been demonstrated by actual tests by the writers. It is well known that hexamethylene-tetramine is readily decomposed by acids. Hartung<sup>12</sup> has shown that warming with strong acids results in the formation of formaldehyde, and more recently, Ischidzu and Inouye<sup>13</sup> have demonstrated that the weaker acids such as acetic, lactic and succinic acid bring about the same result; these investigators also showed that hexamethylene-tetramine is decomposed to some extent even on boiling the aqueous solution. Its use as a bladder antiseptic depends on the liberation of formaldehyde in the bladder due to the presence of acids in the urine; Suder<sup>14</sup> has shown that when the urine is alkaline this decomposition does not take place. It seems a logical conclusion, therefore, that when hexamethylene-tetramine is absorbed by the skin, formaldehyde will be produced in the pores under the influence of the sweat acids.

The corrosive and toxic action of formaldehyde has long been known. Remington and Wood<sup>15</sup> state that formalin is an intense local irritant both to the mucous membrane and, if in sufficient concentration, to the skin. It has been the writer's experience,

however, that the action of a solution of formaldehyde is quite different from that produced by hexamethylene-tetramine. Application of 40 per cent formalin produced a hardening of the skin followed by a scaly appearance due to cracking of the surface. This eventually peels off leaving the lower skin perfectly clear. There is no reddening of the skin, nor any itching sensation.

Formic acid on the other hand is extremely irritative to the skin. On making an application of the strong acid, severe smarting and itching occurs almost immediately, followed shortly by the production of a blister. After twenty-four hours the blister subsides and the affected spot has a pus-like appearance. A thick scab slowly forms and quite a perceptible scar remains after the sore has healed, showing that the acid burns quite deeply. The action of the formic acid resembles very much that of hexamethylene-tetramine, only very much intensified.

This study of the respective effects of formaldehyde and formic acid on the skin has led the writers to believe that the action of hexamethylene-tetramine is due to the formation of formaldehyde in the pores under the influence of the sweat acids, followed by subsequent oxidation of the aldehyde in the pores to formic acid, and that the latter is the active irritant. Though there is no proof that such an oxidation does occur in the pores of the skin such an action seems not so improbable, when it is considered that formaldehyde has been shown to be rapidly oxidized in the system, appearing in the urine as formic acid.<sup>16</sup> The reason for the difference in action of formaldehyde as such and formaldehyde generated from hexamethylene-tetramine may be attributed to difference in absorption. Hexamethylene-tetramine is extremely soluble in water (1 part dissolves in 1.2 parts of water at 12 degrees C.) which permits of rapid absorption through the pores. Formaldehyde, on the other hand, though very soluble in water, when applied to the skin quickly hardens the surface, making it impervious to further absorption. In fact, the property of formaldehyde has been utilized for the purpose of checking excessive perspiration.<sup>17</sup>

On the assumption then that the acid of the perspiration is the primary cause of the rash, neutralization of this acid should prove an effective preventive, and furthermore, if the actual irritant is formic acid, neutralization of this would prevent its action, if it were formed. Any substance used to obtain this result should be itself non-irritating to the skin, preferably neutral in character, and sufficiently soluble in water to be easily absorbed by the skin. Sodium bicarbonate or "baking soda" meets all these requirements. It is neutral, quite soluble in water (one hundred parts of water dissolve 9.6 parts of the salt at 20 degrees C.) and non-irritating, and consequently was selected for experimentation as a preventive means.

In applying the sodium bicarbonate, the method of treatment employed consisted in first thoroughly washing the affected part with soap and water, drying and then applying a saturated solution of the bicarbonate, allowing this to dry without wiping. The thorough washing opens the pores of the skin and allows better penetration of the bicarbonate wash. On drying, a white film of the salt remains as a thin coating which adheres with surprising tenacity. Two applications daily were made, at the beginning and at the middle of the shift. Before leaving the factory the affected parts were washed and no further application made at that time.

The first patient on whom this treatment was tried responded rapidly. The solution was applied to the arms, face and neck, all of which parts were affected. In the course of a week all the rash had completely disappeared, and what was of chief interest, no new eruptions had developed. Since the weather was fairly cool during this period, it might be concluded that this was the cause of the rapid disappearance of the rash. To prove other-

<sup>10</sup> Presented at the fall meeting of the American Chemical Society, September, 1919.

<sup>11</sup> "Diseases of the Skin and Eruptive Fevers," page 26.

<sup>12</sup> J. Prakt. Chem. (2), 46, 16.

<sup>13</sup> J. Pharm. Soc. Japan, January, 1906.

<sup>14</sup> United States Dispensary, 15th Edition, page 611.

<sup>15</sup> United States Dispensary, 20th Edition, page 638.

<sup>16</sup> Remington and Wood, *loc. cit.*

wise and eliminate the temperature factor, the use of the wash on the left arm was discontinued while continuing the application to all the other exposed parts; five days later the left arm, and the left arm only, was broken out with the typical rash. Thinking possibly that this might be due to more frequent contact with this arm with the stock, the treatment was omitted from the right arm and again continued on the left. Four days later an eruption appeared on the right arm, while all the other parts treated with bicarbonate were entirely free from any dermatitis. This patient used bicarbonate for a period of four weeks and during that time had no sign of rash except on the forearms when the wash was omitted as previously mentioned. Before using bicarbonate, this patient had had the rash on some exposed part of his body almost continuously for nearly three months.

A squad of ten men was selected for further tests as to the efficacy of the bicarbonate solution. These men, selected from the various departments handling this stock, had all been troubled more or less severely with rash. This squad was supplied with the bicarbonate wash and carefully observed from day to day during a period of two weeks. All, without exception, showed marked improvement; the old rash healed rapidly and no new eruption developed. During the course of these observations there were several very warm days, which brought on quite a wave of rash among those not being treated. Not one member of the squad, however, developed any rash during this hot spell.

On the strength of these results bicarbonate solution was provided, so that all the men handling the raw stock containing the hexamethylene-tetramine could obtain it if troubled with this rash. Though it was not possible to obtain as accurate data on all those applying the solution, the reports obtained from both the foremen and the men using the solution were very encouraging.

At the Eighth Annual Congress of the National Safety Council held at Cleveland on October 4, 1919, a representative of the Hood Rubber Co. stated that they had had very considerable success in combating this rash by using an aqueous solution of borax containing gum arabic. He stated that this mixture dried with some difficulty, and they had installed electric dryers to obviate this trouble. Though the writers have not had opportunity to test this treatment, they feel that the bicarbonate solution offers a much simpler treatment; it dries readily, is free from the alkaline reaction of borax and in addition costs very much less.

While it is true that the necessity for the application of any preventive or prophylactic solution such as bicarbonate of soda or borax, is a serious drawback to the use of a substance as an accelerator, it does not prohibit its use. It offers a better solution of the difficulty certainly than that offered by the Committee on Accelerators. "Change of occupation," with the entailed loss of wages and curtailed production, can scarcely be considered a satisfactory antidote, either from the standpoint of the employe or employer.

The use of the bicarbonate solution is attended with no disagreeable results. When first applied to a severe case there is considerable smarting, but this soon stops after the solution has dried and the patients report that the severe itching which always accompanies this rash is relieved within a few hours, and there is a marked improvement in the appearance of the skin after twenty-four hours. The solution can be applied to the face and neck and even around the eyes with perfect safety. This is of particular importance, as some of the most severe cases are those in which the face, especially around the eyes, is affected. A case which recently came within the observation of the writers was that of a man whose entire face was inflamed to such an extent that both eyes were completely closed. Not

only was the face affected, but also the arms, shoulders and legs. This case was so severe that it was found necessary to put the patient to bed. Four hours after the first application the inflammation had subsided, the patient stated that the itching sensation was practically gone and he was able to partially open his eyes. At the end of ten hours he was quite comfortable and slept through the entire night. This was quite remarkable for those suffering from the rash complain chiefly of being kept awake at night. Thirty hours after the first treatment he had sufficiently recovered to be discharged from the hospital.

Though the bicarbonate has an apparent curative effect, it is unquestionably chiefly preventive. The case just cited seems to contradict this, but the writers feel that the curative action was simply due to arresting the further action of the absorbed hexamethylene-tetramine. The chief interest in this treatment is the fact that further development of new rash is prevented, and the old rash is thus allowed to heal without further infection.

These observations are published with the realization that they represent the action of bicarbonate on a comparatively small number of cases, but the results seem to justify the conclusion that bicarbonate can be successfully used in controlling the hexamethylene-tetramine rash.

In presenting this paper the writers wish to acknowledge their appreciation of the cooperation of both Dr. D. V. McDonald, medical director, and John Young, chief chemist, of the Firestone Tire & Rubber Co.

#### WESTINGHOUSE WAR MEMORIAL SCHOLARSHIPS AWARDED.

The four annual War Memorial Scholarship awards of \$500 each, established by the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania, have been announced. The following men were successful: Herbert S. Pahren, Cincinnati, Ohio, order clerk in the Cincinnati office, who has selected for his scholarship a technical engineering course at the University of Wisconsin; Arthur Marthens, East Pittsburgh, Pennsylvania, of the cost department, who has chosen a course in electrical engineering at the Carnegie Institute of Technology; Paul O. Langguth, draftsman in the engineering department at East Pittsburgh, who has selected as his award an electrical engineering course at the University of Pittsburgh, and Andrew P. Lesniak, of the production department at East Pittsburgh, who has selected a course in mechanical engineering at the University of Pittsburgh.

Two classes of scholarships are provided by the Westinghouse company:

(a) For sons of employes of the company or its subsidiaries who have been employed for five years or longer.

(b) For employes of the company and its subsidiaries who have been continuously employed for at least two years and who shall not, on September 1, have exceeded the age of 23. Not more than two class B scholarships will be awarded in any year.

Each scholarship carries with it an annual payment of \$500 for a period not to exceed four years, the payment to be applied toward an engineering education in any technical school or college selected by the successful candidate with the approval of the scholarship committee.

These scholarships have been established as a memorial to those employes of the company and its subsidiaries who entered the service of their country during the war. Four awards will be made each year.

#### UNITED STATES PRODUCTION OF BARYTES.

The crude barytes produced and marketed in the United States in 1918 was 155,241 short tons, one-fourth less than the quantity marketed in 1917, and one-third less than that marketed in 1916, according to statistics collected by the United States Geological Survey, Department of the Interior. The average price per ton was \$6.73, as against \$5.66 in 1917 and \$4.56 in 1916.

## Job Analysis and Written Standard Practice.

By James Wright Cary.

**I**T USED TO BE SAID that many a manufacturer had no reliable data concerning costs. This was doubtless true to a certain extent, and perhaps is now, owing to the fact that some managers have failed to appreciate the exacting requirements of a dependable cost department. This has been especially true of new concerns, frequently composed of men who had left old established institutions, to "set up" in business for themselves, and who "carried over" data considered "near enough" to afford a working basis.

### OBJECTIONABLE PIECE RATE PRACTICES.

Many such firms endeavored to institute a "cost department," making time studies of all operations, and setting piece rates. Where the method employed was crude, the results were unsatisfactory. Usually this worked out so the employe could not make a "living wage," and again he made more than the management was willing to pay for the work. To adjust this the rate was sometimes cut down to what it was thought the workman should be allowed to earn. This practice bore the usual fruit, and distrust, dissatisfaction and inharmony established themselves in place of those conditions that are essential to the perfect working of any manufacturing establishment.

So many manufacturers committed themselves to this unscientific way of establishing piece rates, that the very term became a stench in the nostrils of the average workman, and so remains to-day in many localities. This attitude of the worker was fostered by labor organizations, and it is only of recent date that they have softened to any noticeable degree in their hostility to any factory practice that includes the use of the stop-watch and time studies as a means for arriving at a wage rate. It did not take long for a manufacturer to discover that while "setting a piece rate" was, perhaps, easy enough—in fact too easy—it was commercial suicide to "cut it down," and there are some who have been wise enough to "let the rate stand," no matter how much a workman earned, and take the load on their own shoulders where it belongs.

### SCIENTIFIC TIME STUDY THE SOLUTION.

This leads, naturally, to consideration of the question: Is there a scientific way of determining just what a man or machine should produce in a given time, and thereby establishing a wage rate that will be just to workman and manufacturer alike? Scientific time study can be secured by means of written standard practice, but a distinction must be made between "standard" practice, and the experimental studies that ordinarily determine what the standard really is. Standard, therefore, is something scientifically proved.

### BENCH JOB ANALYSIS.

To standardize an operation, calls for job analysis, and to analyze an operation, all the factors that enter into or effect it must be considered. Here are a few of them: consider location of workman or bench as to light, ventilation, temperature, conveniences, receipt and delivery of material, his bench, its dimensions, slope or tilt and height as adjustable to his own. Is its arrangement suited to the job; are there racks or holders for tools; are tools properly placed during work, or does operator have to reach for them; has he complete equipment, or does he have to borrow or lend? Enumerate tools and describe them. Are they made especially for this work, or selected from standard makes of knives, scissors, wrenches, hammers, nippers, etc., and simply utilized as far as they will go for this work; are they too heavy, or clumsy; do they "fit" the hand? While in use are they dropped upon the bench "hit or miss" to be

fumbled for when again required, or are they placed in a rack? Is light ample in source, quality and quantity? Is any part of the work in shadow at any time? Is the light so strong as to affect the eyes? If so, does operator wear shade, colored glasses, goggles to protect from dust or particles? Does operator stand or sit while working? If former, is standing necessary to proper production? Is work tiring? If so in what way, and to what extent? Is there an allowance for fatigue; rest periods; rest rooms? If operator can sit at option, is stool or seat adjustable to height of bench or person; is seat large enough; does it interfere with quantity or quality of work produced? Toilet and drinking facilities: are they sanitary, modern? Interference: consider elements that might interfere with maximum production; tools, bench, light, conveniences as above enumerated. Work in process: are materials supplied to operatives, or do they go for them, or wait for them? What is the length of round trip; what time do trips require? If work is delayed for any cause, give actual time involved and production lost, and calculate the loss over a given period.

### MAKING RECOMMENDATIONS.

If machine operation is under consideration, a proper job analysis would note light, ventilation, temperature, conveniences, safety appliances, receipt and delivery of material, sequence in routing. Describe the machine, giving particularly details essential to parts prominent in its operation. Its "make," registered number, floor space occupied, power used, size of pulleys, belt, shafting, speeds, units of production per day or hour as now operated. Consider the personnel: number of workmen; their duties. Analyze the peculiar adaptability of each to his share of the job: size, weight, temperament, experience. Analyze the group as a whole in their efficiency. What changes would you make to secure best results, in the machine, service, management? Interference: consider elements that interfere with efficient operation: the machine itself; make, year made; is it up to present-day standards, or has it been superseded by later models? If so, in what way and to what extent? Enumerate and describe advantages in exchanging old for new. Show in what way, and how soon, such changes would pay for themselves. Consider method of service: is production curtailed on account of poor routing, defective material, non-delivery of supplies, lack of efficient care of machine? Consider factors in operation: is foreman equal to requirements; number of men married, single, native, foreign; give nationalities. Attitude of foreman to job, to factory, toward his men. How are they paid: day-work, piece-work, bonus? Is the compensation adequate to the character of the job? Are men contented? If not, give reasons. Are toilet conveniences close by; adequate? Is light abundant for the work; ventilation and drinking water what they should be? Do operatives sit or stand at their work? If they sit are the seats of right height, size, construction? Is work exhausting? If so, what provision is made for rest periods; how often, how long? Show in detail the effect on production without rest, and the result with periods of rest. Recreation: provisions for recreation. Is there a circulating library; day or night school; recreation hall; music, such as an orchestra or band; athletic club, factory restaurant, hospital and dispensary, smoking room? To what extent, if any, do the men on the job under examination avail themselves of these advantages? Give particulars as to individuals.

### MAKING RECOMMENDATIONS.

The above gives an idea of what constitutes job analysis. It would be modified or elaborated to suit requirements or the specific ideas of the analyst. Having written up the history of a



job, the investigator presents his recommendations. Naturally he must be prepared to back them up, and in all probability give a practical demonstration of their value before the average management will be convinced that the new method is better than the old. Fortunate indeed is he whose recommendations call for changes in method rather than in machinery. Changes or additions in machinery involving large expenditure have to run the gauntlet of service criticism. Such authorities as Taylor, Gantt, Emerson, Thompson, Diemer and Lichtner, however, could be induced to give a manufacturing proposition their attention on no other basis than that their recommendations be immediately carried out. Their attitude toward every proposition is the scientific one. To be scientific a process must be perfected, otherwise making time studies and setting piece-work rates thereon accomplish but one-half, and the less important half, of what should be attained.

Assuming that the management stands ready to make all changes necessary to secure production according to the highest standard obtainable, the result will be seen in machines that run at proper speeds, that are properly placed, efficiently served, and can be made to produce at the minimum of cost. Studies then made to determine piece rates, if made by an engineer properly qualified for the task, will be dependable, and the facts thus secured will furnish a proper basis and the only one for "Written Standard Practice."

#### INSTRUCTION CARDS.

Having evolved a "standard," the next step is to put it in writing. Preferably, heavy paper or cardboard should be used and kept in a convenient file for ready reference. In conjunction therewith an instruction card is issued for the guidance of the worker. It should prescribe the tools to be used, the time established as standard for each step in the sequence of production, and the rate of pay. A drawing or photograph of the article, with dimensions, would be a valuable addition, together with all directions necessary to a thorough understanding of the work to be done. In standard practice, instruction cards are issued that they may be conformed to in all particulars, and where the article to be made is new, or the method has been changed, their proper use presupposes the special training of the worker by an instructor.

#### THE OBSERVER AND HIS TASK.

An observer "properly qualified for the task" is vital to the success of any plan for establishing a "written standard practice" that is worthy the name. To quote from Gantt's "Work, Wages and Profit," "Stop-watch observations done inefficiently, or with ill-adapted appliances, or by poor methods, are absurd, and serve only to bring into disrepute all work in which the stop-watch is used. Moreover, such use of the stop-watch justly excites the contempt and opposition of the workman."

First of all, the investigator should be a diplomat. His attitude toward the workman should be devoid alike of patronage or servility. He should appreciate fully the dignity and the importance of his position. He should seek, first, to secure the good will of all. Naturally he must be capable, through study and training, to make a dependable report of conditions as he finds them, backed by recommendations that will appeal alike to the workers and the management as covering changes or improvements that will work out to the distinct advantage of all.

#### SECURING THE COOPERATION OF THE WORKER.

If workmen have been paid by the hour, and are known to be hostile to the term "piece work," why make use of it? The declaration that the rate per hour for all sorts of work will remain undisturbed, would at once dispel any latent suspicion that the "time study man" had for his ultimate object the "cutting down" of wages. In short, it is hard to conceive of scientific management in any real sense that has not for its ultimate ob-

ject the establishing of conditions that would make it possible for the average worker to increase his earnings, conjointly with an increase in factory output. That is exactly what written standard practice, scientifically, projected, would secure. Given improvements in machinery and process, how then to secure the interest and cooperation of the workers? By the introduction of incentives toward greater individual interest in the job, the department, the shop. Past records show the average daily production. Pay a substantial premium or bonus in addition to the established daily wage. Create by degrees a class of high-grade workmen, setting aside a part of the factory, where practicable, in which they would work together. This would be applicable in shoe making, tire building and other work where a large number of operatives are engaged in making some one article or performing identical tasks. Place membership in this class on so high a plane that none but the most competent may attain to it, and make their reward so large that the average man or woman will be eternally striving for admission to it. Go a step farther; give an additional bonus to all who produce nothing but first-quality goods in a given period. Do not forget the foreman. Give him a bonus for each member in his department who earns one, and a special bonus when all his workmen make a perfect score.

#### CHILE DEMANDING AMERICAN TIRES.

Chile is rapidly becoming a good market for American automobiles and more especially for American tires. The people have made a great deal of money during the war and the well-to-do are substituting motor cars for their carriages in the cities, to which automobiles are largely restricted owing to poor roads in Chile, which people of moderate means have discovered the conveniences of certain low-priced American cars.

The growth of United States exports to Chile has been phenomenal; in the fiscal year ended June 30, 1913, they were 78 cars, valued \$109,982, and \$2,844 worth of tires; in 1918 the figures were 220 trucks, valued \$282,638, with 3,390 passenger cars, valued \$3,576,511, and tires worth \$725,876, while for the fiscal year 1917-1918, owing to war conditions, the number of cars sank to 152 trucks, valued \$223,733, and 1,057 passenger cars, valued \$1,606,758 and the value of tires exported rose to \$1,130,873. This is due largely to the fact that the bad roads in Chile are very hard on tires. In 1913 the United States had 8 per cent of Chile's automobile trade. In 1917 its share was 95 per cent.

The largest portion of the imports go to Valparaiso, whence many are sent to Santiago and the interior, but the imports to Talcahuano, to Antofagasta and Iquique in the nitrate region and Punta Arenas at the southern point of the continent are also considerable.

#### UNITED STATES PARCEL POST TO DUTCH EAST INDIES AND ZANZIBAR.

Parcel post service is now in operation between the United States and the islands of the Netherlands East Indies producing rubber and gutta percha. The list of islands given out by the post office is: Bali, Banca, Billiton, Dutch Borneo, Celebes, Little Sunda, Madura, the Moluccas, Rioce, Sumatra, Dutch Timor and Dutch New Guinea.

With the outlet of Uganda, also Zanzibar and the neighboring island Pemba, there is now parcel post service, but parcels will be delivered only in the towns of Zanzibar, Chaki-Chuki, and Weti, on Pemba island.

IMPORTS OF MANUFACTURED RUBBER GOODS FOR GREECE AND THE islands of the Archipelago amount to about \$200,000 a year. This used to come from Germany, but is now in the hands of French and British dealers, including about \$30,000 worth of belting and \$40,000 worth of tubing of all kinds; the rest is made up of waterproof rubber shoes, pneumatic tires and air cushions.

## Vulcanization by the Use of the Sulphur Reaction Product of a Nitrogen Accelerator.

**B**RITISH PATENT No. 130,857, recently granted, covers vulcanization of rubber by the use of the sulphur reaction product of a nitrogen accelerator.

The specification states that in the curing of rubber no practical or commercial product has ever been produced from the reaction of sulphur with caoutchouc without the aid of a nitrogen-containing body present during vulcanization. This nitrogenous body may be found in natural rubber or may be added in the process of manufacture. The absence of all nitrogen, however, gives a vulcanization product that is of no value commercially. It has been the practice to add to the rubber before vulcanization certain nitrogen bodies (accelerators), which appear to have the effect of shortening the time required to cure the product and to improve its properties.

It has been found that these nitrogen accelerators are not usually the ultimate bodies which assist in the vulcanization of caoutchouc, but that they must first react with sulphur and that the sulphur reaction product thus formed is the agent which either aids or is entirely responsible for the satisfactory vulcanization of the rubber with sulphur.

Although this principle is believed not to have been recognized heretofore, a specific example has been proposed, namely the use separately as accelerating substances, of liquid and solid products of the interaction between paranitroso-dimethyl-aniline or any of its homologs, and sulphur. The use of these particular accelerating substances is excluded from the present invention.

Vulcanization of rubber under this invention is divided into two distinct steps: first, the production of a sulphur reaction product of a nitrogen accelerator, and second, vulcanization proper, the reaction product being incorporated in the mix. A number of advantages result. For example, the temperatures used in vulcanization of caoutchouc are only occasionally and by merest coincidence, those most suitable for a reaction between sulphur and a nitrogen accelerator. In some cases, as in the use of hexamethylene-tetramine, the reaction with sulphur is violent, and produces large volumes of gas including hydrogen sulphide and other malodorous compounds, resulting in the formation of a vulcanized product which is often porous and bad smelling. In other instances the temperature of vulcanization is not sufficiently high to cause satisfactory reaction between the nitrogen accelerator and the sulphur and the accelerating effect is partly or wholly unattained. For example, carbanilide is almost inactive at the temperature corresponding to 40 pounds of steam pressure (141.4 degrees C.) while at 60 to 80 pounds pressure (153 to 162 degrees C.) it shows very valuable qualities.

By carrying out the reaction between the nitrogen accelerator and the sulphur before compounding them with rubber, the exact temperature best suited to this particular reaction may be employed and all undesirable by-product be removed before the finished reaction product is introduced into the rubber mixing. In many cases the curing value referred to the nitrogen content is more than doubled by using the sulphur reaction product of a nitrogen accelerator instead of the nitrogen accelerator itself.

A mixture by parts of sulphur 1, zinc oxide 16, and plantation pale crêpe rubber 16, cures to the best product in from 2½ to 2¾ hours at 141 degrees C. The addition of two parts of anhydro-formaldehyde-aniline (methylene-aniline) shortens the cure to about 45 minutes.

This accelerator when caused to react with aniline and sulphur forms a sulphur-nitrogen compound 1¼ parts of which used in place of the anhydro-formaldehyde-aniline in the above mix,

shortens the time of cure to 20 minutes. This shortened cure benefits the product as evidenced by higher tensile strength and higher modulus of elasticity.

By anhydro-formaldehyde-aniline (methylene-aniline) is meant the reaction product of two molecules of formaldehyde on two molecules of aniline, giving two molecules of methylene-aniline which polymerizes and may be conveniently considered a di-polymer.

### EXAMPLE I.

The preferred method for producing this sulphur-nitrogen accelerator is as follows: 210 parts (one molecule) methylene-aniline and aniline are boiled under a reflux condenser for five hours at 195 to 198 degrees C. (thermometer in the liquid). The mixture is then cooled to 150 degrees C. at which point the sulphur is added. The temperature is next raised slowly to 175 degrees C. and held until 56 to 60 parts by weight (about two molecules) of hydrogen sulphide are lost. The free aniline is distilled off by steam distillation, care being taken to remove the aniline from the reaction mixture to such an extent that the product will cool to a hard brittle mass.

Thiocarbanilide or methylene-diphenyldiamine may be substituted in the foregoing example with the proper precautions and a similar product may be produced having a higher curing power than the original base. The reaction products thus obtained when dried are suitable for use in rubber mixings and show many advantageous properties as accelerators.

### EXAMPLE II.

Methylene-diphenyldiamine 198 parts (one molecule); sulphur 64 parts. These ingredients are slowly melted and heated to 120 to 150 degrees C. until 34 to 36 parts (one molecule) of hydrogen sulphide has been removed. The reaction product is then steam-distilled, removing about 93 parts (one molecule) of aniline which has been produced during the reaction.

### EXAMPLE III.

Methylene-aniline, 210 parts (one molecule of di-polymer); sulphur, 64 parts. The ingredients are slowly melted and then heated to 150 to 170 degrees C. until 34 parts (one molecule) of hydrogen sulphide are removed.

There is also produced some carbon di-sulphide, which may be estimated by absorption in aniline and allowed for, although this is not necessary. The product is then steam-distilled until no more aniline will come over.

### EXAMPLE IV.

Straight sulphur reaction on tri-phenyl-guanidine; 287 parts tri-phenyl-guanidine; 64 parts sulphur. The mixture is heated to 225 degrees C. under reflux until 34 parts (one molecule) hydrogen sulphide is lost. The compound on cooling is ground and compounded with rubber and has the same curing power, nitrogen for nitrogen, as tri-phenyl-guanidine itself.

### EXAMPLE V.

Sulphur on tri-phenyl-guanidine with 287 parts tri-phenyl-guanidine; 186 parts aniline; 64 parts sulphur. The mixture is heated gradually to 236 degrees C. until 34 parts of hydrogen sulphide has been removed. In order to raise the temperature the aniline must be partially distilled off with a simultaneous evolution of gas. When the aniline removed equals 186 parts, or nearly so, and the hydrogen sulphide has reached or passed 34 parts, the reaction is complete, and on cooling is found to be a hard reddish-brown resin having a conoidal fracture. It is equal in curing power to tri-phenyl-guanidine.

The term "nitrogen accelerators" is intended to include, with the exceptions cited above, all of those nitrogen-containing bodies

the properties of which are such that they tend to react with sulphur in a rubber mixing as the result of which vulcanization is effected or expedited. Many substances are inherently accelerators in this sense which would not be so regarded at present because their accelerating effect cannot be obtained under the temperature and other limitations of the curing process itself.

In addition to amino bodies, secondary amines and imines, such as the specific nitrogen accelerators above mentioned, nitroso bodies, except paranitroso-dimethyl-aniline and its homologs, cyanide bodies, such as sodium ferrocyanide, and proteids and

the products of their decomposition and hydrolysis, including the amino acids, and such, for instance, as animal glue or gelatine, give good results when employed according to this process.

Although in some respects advantageous to limit the amount of sulphur to that required for reaction with the nitrogen accelerator, it is permissible to admix with the nitrogen accelerator the entire amount of sulphur to be used for vulcanization. With the exception of a few above mentioned compounds, the nitrogen-containing bodies used contain the amino group or a substituted amino group.

## Rubber Tariffs of North America.

**M**ANUFACTURED RUBBER GOODS were exported in 1918 from the United States to the other countries of North America, Canada and the British Colonies, Mexico, the Central American States, Cuba and the other West Indian Islands to the amount of \$10,417,390, showing the same steady increase that marked each year of the war. The change from the fiscal year, beginning July 1 and ending June 30, to the calendar year beginning January 1 and ending December 31, renders the necessary comparisons a little awkward, for the 1918 figures are identical for six months with those for the fiscal year 1917-18. The exports in that period were \$9,707,020 which was over a million and a half more than the \$7,994,805 of 1916-17 and that exceeded by much more than two millions the \$5,664,173 of 1915-16, which in turn was nearly a million and a half more than the \$3,257,865 of 1914-15, the first year of the European war.

That figure was a little below the fairly steady average of the previous years which was something under four million dollars a year.

The chief customer of the United States in all the lines save tires was Canada which took \$4,734,351 of rubber goods; Cuba was next with \$2,486,104 and Mexico, third, with \$1,715,559; far behind followed Panama with \$287,286, Jamaica with \$165,657,

the Dominican Republic with \$145,007, while the Danish West Indies, which now belong to the United States, bring up the rear with \$14,427.

Automobile tires form the largest item of the exports, \$4,422,020; of these Cuba took \$1,454,090, Canada, \$1,278,000, and Mexico, \$999,569. For belting and hose of which \$1,552,974 was exported, Canada leads among the purchasers with \$511,381; Mexico is next with \$459,325; and Cuba, third, with \$386,069.

Druggists' rubber sundries appear in the list for the first time in 1918, when they were exported to the amount of \$412,801; previously they had been included among "other manufactures" of rubber which, with them, made up a total of \$2,815,326. Rubber boots and shoes combined were sold to the amount of 760,041 pairs worth \$1,358,372; for these Canada was by far the best customer, taking over \$900,000 worth with Newfoundland next with \$250,000; the southern countries had no call for goloshes.

The succeeding extracts from the tariffs of the principal countries of North America show the competition to which rubber manufacturers of the United States are subject under existing tariff conditions. Owing to frequent tariff changes the figures and information given below should be periodically verified and small trial shipments made to test the rates:

UNITED STATES EXPORTS OF RUBBER GOODS TO NORTH AMERICA—1913-1918.

EXPORTED TO—	Belting, Hose, and Packing. Value.	Boots.		Shoes.		Druggists' kupper Sundries. Value.	Auto- mobile. Value.	Tires.		All Other Rubber Manu- factures. Value.	Totals. Value.
		Pairs.	Value.	Pairs.	Value.			All Others. Value.			
NORTH AMERICA:											
Bermuda .....	\$956	21	\$114	918	\$1,144	\$1,042	\$200	\$565	\$2,278	\$6,299	
British Honduras .....	389	.....	.....	25,484	24,284	855	4,882	666	1,099	32,175	
Canada .....	511,381	57,513	189,566	318,919	722,994	235,394	1,278,000	66,452	1,730,564	4,734,351	
Central American States—											
Costa Rica .....	6,067	.....	.....	96	76	772	5,851	901	2,690	16,357	
Guatemala .....	7,755	.....	.....	2,075	2,195	3,766	20,073	888	7,761	42,438	
Honduras .....	11,463	66	146	14,713	11,645	1,452	22,014	1,564	2,623	50,907	
Nicaragua .....	7,858	.....	.....	5,037	5,698	1,195	3,448	226	11,970	30,393	
Panama .....	79,545	6,146	7,177	31,695	29,080	5,886	117,442	14,064	34,092	287,286	
Salvador .....	7,577	.....	.....	.....	.....	1,136	26,848	349	20,448	56,358	
Mexico .....	459,325	196	1,081	24,664	23,992	53,225	999,569	50,769	127,598	1,715,559	
Miquelon, Langley, etc....	35	2,196	7,095	1,163	748	31	.....	.....	616	8,525	
Newfoundland and Labrador	26,783	40,189	125,243	128,866	124,214	2,296	15,212	451	24,320	318,519	
West Indies—											
British—											
Barbados .....	1,896	9	42	1,883	1,829	1,336	30,435	1,656	3,061	40,255	
Jamaica .....	8,424	.....	.....	1,499	1,762	2,978	129,825	12,814	9,854	165,657	
Trinidad and Tobago..	8,618	.....	.....	3,087	2,123	5,438	90,862	1,512	8,178	116,731	
Other British .....	2,961	24	38	4,738	3,829	1,641	29,100	1,349	2,182	41,100	
Cuba .....	386,069	1,391	1,888	83,593	65,922	88,561	1,454,090	103,071	386,503	2,486,104	
Danish (Virgin Islands, the United States)....	1,182	.....	.....	731	878	447	10,020	197	1,703	14,427	
Dominican Republic .....	17,894	.....	.....	1,792	2,162	4,364	95,511	7,159	17,917	145,007	
Dutch .....	831	.....	.....	453	402	518	13,515	153	1,414	16,883	
French .....	2,611	.....	.....	688	695	42	47,684	1,061	2,443	54,536	
Haiti .....	3,354	1	6	193	304	426	27,439	2,831	3,211	37,571	
*Totals, NORTH AMERICA	\$1,552,974	107,752	\$332,396	652,289	\$1,025,976	\$412,801	\$4,422,020	\$268,698	\$2,402,525	\$10,417,390	
Fiscal year, 1917-18.....	\$1,529,170	\$147,710	\$415,174	418,946	\$381,355	\$408,220	\$4,474,713	\$306,435	\$2,191,951	\$9,707,020	
Fiscal year, 1916-17.....	1,171,463	116,695	303,635	312,128	231,320	.....	3,186,265	362,547	2,729,575	7,994,805	
Fiscal year, 1915-16.....	837,147	59,878	154,923	163,234	113,365	.....	2,184,874	265,833	2,108,031	5,664,173	
Fiscal year, 1914-15.....	627,696	39,087	104,100	119,337	75,357	.....	1,187,632	146,186	1,116,894	3,257,865	
Fiscal year, 1913-14.....	923,941	42,712	124,121	135,952	82,899	.....	1,254,200	168,128	1,276,084	3,829,373	
Fiscal year, 1912-13.....	1,328,305	24,881	80,939	146,927	86,219	.....	1,626,155	197,530	1,508,032	4,827,180	

\*Calendar year 1918.



**BERMUDA.**

*Equivalents.*—Pound Sterling, normally \$4.86.

All goods, with a few exceptions consisting of liquors, spirits, tobacco and manufactures thereof, live stock, agricultural products and provisions, meat, patent medicines, creams and lotions, are liable to import duty of 10 per cent ad valorem. In addition to this duty, a surtax is leviable equal to 10 per cent on the amount of duty payable.

Goods imported on account of the local government by any officer or committee, being the property of the public or purchased at public expense, are exempt. Fire engines and all other articles imported by the Corporation of Hamilton, as part of the equipment of the Hamilton fire brigade are also exempt.

Persons exporting goods are entitled on certain conditions to the whole of the duty paid on the importation thereof when the duty on said goods amounts to £2.

Drawbacks of duties are allowed for goods sold to and becoming the property of His Majesty's Government.

**BRITISH HONDURAS.**

*Equivalents.*—The dollar, equal to the American dollar, is the monetary unit.

All goods, excepting certain articles of food, aerated waters, liquors, spirits, tobacco and manufactures, explosives, arms and ammunition, jewelry, lumber, certain oils, opium, perfumery, phonographs and similar articles, are liable to import duty of 15 per cent ad valorem, including the cost of packages in which they are packed.

Fire extinguishing apparatus, accessories and appliances, are duty free, as are also machinery—agricultural, electrical, marine, mining and manufacturing or parts thereof, including boilers, belting, steam pipes, packing, lagging, fittings, batteries and charges. Unmanufactured rubber is exempt from duty; on chiclé there is an export duty of ½ cent per pound.

**CANADA.**

*Equivalents.*—N. o. p. represents the words "not otherwise provided for." "Per cent" represents per centum ad valorem.

Tariff No.	British Preferential Tariff. Per Cent.	Intermediate Tariff. Per Cent.	General Tariff. Per Cent.
<b>CRUDE RUBBER, ETC.</b>			
254. Chiclé and Pontianak gums.....	5	7½	7½
616. Rubber and gutta percha, crude caoutchouc or india rubber, unmanufactured; powdered rubber and rubber or gutta percha waste.....	5	7½	7½
616a. Crude balata .....	Free	Free	Free
<b>PASTES.</b>			
618. Rubber cement .....	20	32½	35
<b>BOOTS AND SHOES.</b>			
617. India rubber boots and shoes.....	20	30	32½
<b>TIRES.</b>			
592. Tires of rubber for vehicles of all kinds, fitted or not.....	27½	37½	42½
<b>OTHER GOODS.</b>			
407. Wire, single or several, covered with cotton, linen, silk, rubber or other material, including cable so covered....	25	35	37½
562. Oiled silk and oiled cloth, and tape or other textile, rubbered, flocked or coated, n. o. p.....	25	35	37½
569. Stockinettes for the manufacture of rubber boots and shoes, when imported by manufacturers of rubber boots and shoes, for use exclusively in the manufacture of such articles in their own factories.....	15	20	22½
616. Hard rubber in sheets, but not further manufactured and recovered rubber and rubber substitute.....	5	7½	7½
618. All manufactures of india rubber and gutta percha, n. o. p.....	20	32½	35
619. India rubber clothing and clothing waterproofed with rubber; rubber or gutta percha hose, and cotton or linen hose lined with rubber; rubber mats or matting and rubber packing.....	27½	37½	42½
620. Elastic webbing, over one inch wide....	17½	25	27½
676. Rubber bulbs, for vaccine points, when imported by manufacturers, for use exclusively in the manufacture of such articles in their own factory....	Free	Free	Free
683. Filets of cotton and rubber not exceeding 7 inches wide, when imported by manufacturers of card clothing....	5	7½	7½
684. Rubber thread, not covered.....	5	7½	7½
742. Hard rubber, unfinished, in tubes, for use only in the manufacture of fountain pens, when imported by manufacturers of such pens.....	10	15	17½
747. Paper and materials of paper, gutta percha, imitation rubber, imported by manufacturers of music rolls, for use only in their own factories.....	5	7½	7½
755. Hard rubber, in strips or rods, but not further manufactured, when for use in Canadian manufactures.....	5	7½	7½

The rates of customs duties, set forth in column 1, "British Preferential Tariff," apply to goods the produce or manufacture of most British colonies and professions when imported direct from any British country. Crude rubber and balata imported from the West Indies into Canada come under the preferential tariff.

Certain French, Dutch, and Belgian goods enjoy the benefits of the intermediate tariff, among which are:

Tariff No.

618. Rubber cement and all manufactures of india rubber, n. o. p.

**COSTA RICA.**

*Equivalents.*—Gold colon, 45 cents; kilo, 2.2 pounds.

**CRUDE RUBBER.**

Tariff No.	Duty per Kilo in Colons.
57. Crude rubber .....	0.06

**PASTES.**

59. Liquid or cement for repairing tires.....	0.30
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**BELTING, HOSE, AND PACKING.**

57. Machine belting of rubber.....	0.06
58. Machine packing of rubber.....	0.10
58. Water pipes and hose of rubber.....	0.10

**BOOTS AND SHOES.**

62. Garters, shoes, boots, heels.....	1.00
<b>TIRES.</b>	
59. Wheels for coaches and carriages with rubber tires.....	0.20
59. Rubber tires for carriages, automobiles and other vehicles...	0.20

**DRUGGISTS' SUNDRIES.**

62. Bed sheets, mattresses, life belts, cushions, nipples, injectors, bottle stoppers, pipes, and all other articles of rubber or gutta percha, n. o. s., and not ornamented.....	1.00
94. Trusses, suspensory bandages, pessaries, bougies, probes, elastic stockings, abdominal belts and other unenumerated appliances and apparatus for surgical purposes.....	1.00

**OTHER GOODS.**

46. Elastics for footwear.....	2.50
48. Elastics, garters, braces.....	5.50
59. Paving slabs of rubber.....	0.20
60. Foot-wipers and similar articles of rubber and cork.....	0.40
62. All kinds of rubber toys, made up waterproofs or capes of gutta percha and rubber on or in combination with wool, or wool and cotton, vaporizers, stoppers, rubber seals and letters .....	1.00
63. Ornamental wares of less than 2 kilos, in weight of rubber or indurated gums, fountain pens.....	2.00

The duties are payable on gross weight, if the tariff provides that the goods are chargeable on weight without any deductions for packing receptacle. If the receptacle is liable to a higher rate of duty than its contents, it shall be assessed separately. Imported goods shall pay inclusive of all duties, the rates leviable thereon, under the tariff, besides the quay due of ½ centime per kilogramme. Goods which under contract or special laws are duty free, shall pay consular fees, except as to those which are expressly exempt from such fees.

Rubber is subject to an export duty of 10 per cent ad valorem.

**GUATEMALA.**

*Equivalents.*—Peso (100 centavos), 96 cents; kilo, 2.2 pounds.

Rubber goods are not specifically mentioned in the Guatemalan tariff. A decree of December 3, 1903, establishes a duty of 4 centavos per quintal (220 pounds) on goods removed from the Champerico customs house.

Among articles paying 11½ per cent ad valorem are mentioned pumps of iron with or without hose, for mines, fire-engines, or watering purposes. On rubber, there is an export tax amounting to 10 pesos per quintal, gross weight.

**HONDURAS.**

*Equivalents.*—Silver peso (100 centavos), about 40 cents; kilo, 2.2 pounds.

**CRUDE RUBBER.**

Tariff No.	Duty Per Half Kilo in Pesos.
411. Crude rubber .....	0.10

**BOOTS AND SHOES.**

255. Top boots of rubber .....	0.50
1650. Boots and shoes of all kinds.....	1.00

**TIRES.**

967. Bicycle tires .....	0.50
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**DRUGGISTS' SUNDRIES.**

83. Air cushion .....	0.10
582. Waterproof aprons .....	0.50
895. Rubber syringes .....	0.30
1042. Rubber stockings .....	0.50
1587. Vaporizers .....	0.25

**OTHER GOODS.**

171. Rubber buckets .....	0.25
412. Rubber manufactured into articles not specified.....	0.50
610. Boots, elastic .....	0.25
792. Rubber manufactured into articles not specified.....	0.25
829. Gutta percha manufactured into articles not specified.....	0.25
946. Garters .....	1.00
1268. Waterproof ponchos .....	0.35
1190. Balls .....	0.25
1403. Rubber stamps and accessories.....	0.25
1477. Rubber stoppers .....	0.20
1499. Waterproof tissues, not specified.....	0.50

Save in the case of wood for building purposes, all goods enumerated in the tariff of Honduras are assessed for duty on gross weight per half kilogram.

Importers have to pay for the cartage and stowage of goods a tax of 50 centavos per 100 kilos, which the customs shall levy at the time of passing each import entry.

Rubber, the produce of Honduras, shall pay an export duty of 3 pesos per quintal.

## NICARAGUA.

Equivalents.—Peso (paper), about 17 cents; kilo, 2.2 pounds.

Tariff No.		Duty Per Kilo, in Pesos.
<b>CRUDE RUBBER, ETC.</b>		
199.	Crude rubber and gutta percha, in slabs and rolls.....	0.75
<b>BELTING.</b>		
354.	Machine belting of rubber.....	0.38
<b>BOOTS AND SHOES.</b>		
346.	Footwear of rubber such as top boots and waterproof boots	1.13
90.	Footwear of all kinds, n. s., including gaiters and leggings,	1.80
91.	The same, for women.....	1.80
<b>DRUGGISTS' SUNDRIES.</b>		
362.	Syringes and nipples.....	0.75
<b>OTHER GOODS.</b>		
330.	Napkin rings and other domestic articles of rubber, gutta percha, etc.	1.50
349.	Manufactures of rubber not specified.....	1.13
350.	Masks of rubber, gutta percha, etc.....	1.50
846.	Cotton elastic tapes and cards for any use.....	0.98
862.	Cotton boot and shoe elastic.....	0.53
906.	Cotton elastic suspenders, garters, belts.....	1.50
1059.	Wool elastic ribbons.....	2.25
1061.	Woolen belts, sash, garters, suspenders, elastic or not....	2.25
1071.	Woolen boot and shoe elastic.....	0.53
1130.	Silk elastic ribbons.....	4.50
1135.	Silk boot and shoe elastic.....	1.50
1142.	Silk garters, belts, suspenders, elastic or not.....	4.50
1484.	Bicycles and accessories.....	0.45
1548.	Cloaks and capes of rubbered cotton or linen tissue and similar articles for men and women.....	0.75
1549.	Cloaks, capes and similar articles of woolen or silk tissue, for men or women.....	2.25
1576.	Toy balloons.....	0.38
1613.	Dress shields.....	1.50
1618.	Stamps (seals) of all kinds.....	0.75
1625.	Oil cloth, painted, varnished or prepared for partitions and flooring.....	0.19
1626.	The same for carriages and table covers.....	0.38

A decree dated November 13, 1895, places a duty of four centavos on each pound of rubber exported from the Department of Zelaya, District of Siquia, region of Cape Gracias a Dios.

\*Tariff Nos. 1625 and 1626 include cloth covered with rubber or varnish of rubber.

## PANAMA.

Equivalents.—Balboa, 1 dollar; kilo, 2.2 pounds.

For the purpose of collecting duty, merchandise are divided into four classes:

1. Articles free from payment of the tax.  
Among these articles are included machinery for the manufacture of rubber and articles imported by the local government.

2. All merchandise not specified in the first and third class will be divided into two groups, A, paying 10 per cent ad valorem, and B, paying 20 per cent ad valorem. To group A belong various kinds of provisions, oils, cement, barbed wire, hatchets and similar tools, books, printed matter not coming through the post, lace and hennepin bags.  
All other articles belong to group B.

The 20 per cent on articles in group B will not become effective without taking into account that provided for in Article 121 of the Constitution, and after coming to an agreement with the Government of the United States in accordance with what is laid down by the Taft Convention.

3. Different kinds of spirits, alcoholic and soft drinks; passengers' baggage when its weight exceeds that established by this tariff.

## SALVADOR.

Equivalents.—Peso, nominal value 96 cents; real value about 38 cents; kilo, 2.2 pounds.

Tariff Nos.		Duties Per Kilo in Pesos.
<b>CRUDE RUBBER.</b>		
243.	Unmanufactured rubber.....	0.10
<b>BOOTS AND SHOES.</b>		
246.	Boots, shoes, leggings.....	1.00
<b>BELTING, HOSE AND PACKING.</b>		
242.	Rubber in belts or as packing.....	0.01
244.	Hose or water pipes.....	0.30
<b>DRUGGISTS' SUNDRIES.</b>		
98.	Suspensories, trusses, all kinds of bandages, syringes, nursing bottles, breast pumps, cupping glasses.....	0.40
<b>OTHER GOODS.</b>		
10.	Cotton elastic for shoes.....	0.35
32.	Woolen elastic for shoes.....	0.50
36.	Other woolen elastic bands.....	1.50
37.	Braces, garters, etc., of woolen elastic webbing.....	2.00
44.	Silk elastic for shoes.....	1.00
50.	Other silk elastic.....	3.00
54.	Linoleum and other fabrics coated with rubber or wax, for floors.....	0.30
55.	Unspecified cloth coated with wax or rubber for table or furniture covers, etc.....	0.40
243.	Rubber, for flooring.....	0.10
245.	Toys, jewelry and other unspecified articles.....	0.60
246.	Cloaks or other garments; dress-preservers, billiard cushions, cord for catapults, etc.....	1.00
314.	Flasks, covered with gutta percha.....	0.30

By a commercial convention between France and Salvador, France is entitled to the minimum tariff rates on rubber imported from Salvador. Among French goods entering Salvador, unspecified articles of rubber pay a duty of 0.45 peso. This tariff is also applicable to Germany.

According to a law of April 4, 1911, there is an export tax on rubber amounting to 1.20 pesos per quintal, gross weight.  
The import duties on all goods introduced into the ports of the Republic are increased by 20 per cent in American gold.

## MEXICO.

Equivalents.—Silver peso, 49 cents; kilo, 2.2 pounds; n. s. m., not specially mentioned.

Tariff No.		Duties, Pesos.
<b>BELTING, HOSE AND PACKING.</b>		
654.	Rubber machinery belts, belts of tarred cotton or hemp.....	0.25
661.	Rubber hose, over 15 millimeters in external diameter, even combined with cloth.....	0.15
677.	All kinds of packing.....	0.05
<b>BOOTS AND SHOES.</b>		
687.	Rubber footwear, also that containing cloth.....	1.00
<b>TIRES.</b>		
633.	Rubber tires of all kinds for automobiles, even with parts of leather; inner tubes.....	0.75
<b>OTHER GOODS.</b>		
352.	Elastics of cotton and rubber, over 4 centimeters wide.....	0.75
353.	Elastics of cotton and rubber, not over 4 centimeters wide.....	1.25
445.	Elastics of wool and rubber, over 4 centimeters wide.....	1.25
446.	Elastics of wool and rubber, not over 4 centimeters wide.....	2.00
504.	Elastics of rubber and silk (pure or mixed with other fibers), over 4 centimeters wide.....	3.00
505.	The same, up to 4 centimeters.....	5.00
652.	Articles n. s. m. of gutta percha, celluloid, rubber or rubbered cloth.....	0.60
684.	Rubber erasers, rubber tire cement.....	0.60
688.	Rubber in sheets, all kinds.....	0.12
689.	Dental rubber.....	4.00

An export duty of 6 per cent ad valorem is levied on guayule plants and other rubber-yielding plants (on rubber content), also a duty of 4 per cent ad valorem on guayule rubber.  
By legal weight is understood the weight of the goods in the internal packing.

## NEWFOUNDLAND.

Equivalents.—Dollar, same as United States dollar.

Tariff No.		Duty Rates, ad Valorem.
<b>BELTING AND HOSE.</b>		
12.	Belting of leather or other material.....	10%
82.	Rubber or gutta percha hose, and cotton or linen hose lined with rubber or gutta percha.....	40%
<b>BOOTS AND SHOES.</b>		
82.	India rubber boots and shoes.....	40%
<b>TIRES.</b>		
32.	Rubber tires for carriages.....	20%
13.	Bicycles, tricycles and parts n. s. m.....	40%
<b>OTHER GOODS.</b>		
54.	Diving apparatus.....	10%
82.	Rubber clothing and clothing made waterproof with rubber or gutta percha.....	40%
82.	All other manufactures, in part or in whole, made of rubber or gutta percha.....	40%
131.	Elastic webbing; round and flat garter elastic.....	25%
134.	All kinds of rubber erasers.....	35%

Articles imported by the local government, charitable donations of clothing, etc., supplies, stores and donations for the Moravian missionaries on Labrador and for the Deep Sea mission (under such rules and regulations as may be made by the governor in council), are exempt from duty.

## BARBADOS.

Equivalents.—Money and weights, same as Great Britain.

The general tariff places a duty of 11½ per cent ad valorem on india rubber goods. The preferential tariff for Great Britain and British countries on the same articles is 9 per cent ad valorem.

All goods imported by the governor of the island or by the local government, are exempt, also machinery belting.

## JAMAICA.

All goods, other than liquors, live stock, provisions, arms and ammunition, lumber—which pay specified duties—and agricultural implements, tools, electrical and gas apparatus, bagging, printed matter; provisions, stores, etc., for government use, certain medicines, machinery, manufactures of metals, plants, educational articles—which are duty free—are liable to a duty of 10 per cent ad valorem.

## TRINIDAD AND TOBAGO.

Manufactures of india rubber are subject under general tariff to a duty of 10 per cent ad valorem, while products of Great Britain and British countries enjoy a preferential tariff, which puts a duty of 8 per cent ad valorem on these goods.  
Balata, crude rubber, and chicla are duty-free.

## CUBA.

Equivalents.—Peso, 60 cents; kilo, 2.2 pounds.

Tariff No.		Duties in Dollars.
<b>CRUDE RUBBER, ETC.</b>		
78c.	Rubber and gutta percha.....	100 kilos 3.00
<b>BOOTS AND SHOES.</b>		
314a.	Boots and shoes.....	kilo 0.32½

## TIRES.

227. Solid and pneumatic tires for motorcycles and automobiles, and all other vehicles..... 25% ad valorem

## OTHER GOODS.

- 309a. <sup>1</sup>Hose and piston packing.....kilo 0.05  
 314a. <sup>2</sup>Waterproof, rubbered, cotton, tissues.....kilo 0.32½  
 314. <sup>2</sup>Waterproof fabrics, for raincoats.....kilo 0.25  
 314b. <sup>2</sup>Waterproof, rubbered silk and woolen fabrics for raincoats.....kilo 0.65  
 309b. <sup>1</sup>All other articles.....kilo 0.20

<sup>1</sup>Twenty per cent tare allowance.  
<sup>2</sup>Other waterproof fabrics for raincoats, kilo, 0.50.  
 Manufactures of articles under No. 314 shall be liable to a surtax of 30 per cent, except boots and shoes.

## DOMINICAN REPUBLIC.

Equivalents.—The American gold dollar is the standard in force. Kilo, 2.2 pounds; g. w., gross weight; n. w., net weight.

## CRUDE RUBBER, ETC.

- | Tariff No. |  | Duty Rates. |
|------------|--|-------------|
| 1093.      | Crude rubber, waste and scrap (n. w.).....kilo | \$0.20      |

## BELTING, HOSE AND PACKING.

- |        |  |        |
|--------|--|--------|
| 1093b. | <sup>1</sup> Packing, not in sheets, of rubber, pure or combined with any material, including piston packing, valve packing, etc.; and rings, discs, gaskets, washers (n. w.).....kilo | 0.25   |
| 1693a. | Rubber or gutta percha in sheets, combined or not with other material for packing (n. w.).....kilo   | \$0.20 |
| 1093c. | Driving belts of rubber combined with other material, n. w. ....kilo   | 0.30   |
| 466.   | Hose of cotton or other fiber, combined with rubber, n. w. ....kilo  | 0.10   |
| 1093d. | Hose of rubber combined with other materials (n. w.).....kilo  | 0.10   |
- (The weight of hose fittings shall be included, if attached.)

## BOOTS AND SHOES.

- |        |   |      |
|--------|---|------|
| 1094d. | Boots and shoes of rubber, combined or not with other material (n. w.).....kilo | 0.25 |
|--------|---|------|

## TIRES.

- |        |   |      |
|--------|---|------|
| 1094a. | Rubber tires, combined or not with other material, and inner tubing, for all kinds of vehicles (n. w.).....kilo | 0.80 |
|--------|---|------|

## DRUGGISTS' SUNDRIES.

- |        |  |      |
|--------|--|------|
| 237.   | Ear trumpets and cupping glasses of rubber (n. w.).....kilo  | 2.00 |
| 1094e. | Water bottles, caps, syringes, ice and urinal bags (n. w.).....kilo                                | 1.00 |
| 1094f. | Rubber nipples, fittings for nursing bottles, teething rings and similar articles (n. w.).....kilo | 1.00 |
| 1095g. | Hard rubber syringes and syringe tips (n. w.).....kilo   | 2.50 |
| 1095.  | Dental rubber (n. w.).....kilo   | 2.50 |

## OTHER GOODS

- |       |   |      |
|-------|---|------|
| 302a. | Copper wire covered with rubber or other insulating material other than silk or wool (n. w.).....kilo | 0.30 |
| 458.  | Cotton elastic bands up to 5 millimeters wide.....100 meters  | 0.75 |
| 458a. | The same, wider, for each centimeter or fraction thereof in width.....100 meters                      | 1.50 |
- (NOTE.—The same rate shall be applied to cotton elastic textiles factured with threads of rubber.)
- |      |   |       |
|------|---|-------|
| 459. | Elastic cotton suspenders.....dozen   | 2.00  |
| 460. | Elastic cotton garters, arm bands.....dozen pairs   | 0.60  |
|      | And in addition (n. w.).....kilo  | 0.60  |
| 461. | Other made up articles of cotton elastic fabric, bands, ribbons, tapes (n. w.).....kilo                 | 2.50  |
| 468. | Waterproof textiles of rubber and cotton (n. w.).....kilo   | 0.30  |
| 469. | Ponchos and blankets of cotton and rubber fabric.....dozen  | 8.00  |
| 470. | Coats, capes, overcoats of waterproof fabric of cotton and rubber.....dozen                             | 12.00 |
| 471. | Trousers of cotton rubber-waterproofed.....dozen  | 5.50  |
| 472. | Hats, caps, headgear covers and similar small articles of waterproof cotton and rubber fabric.....dozen | 2.40  |
- (NOTE.—Any articles in paragraphs 470, 471, 472, when of sizes suitable only for children's wear, shall pay 60 per cent of the duties provided for in said paragraphs.)
- |        |  |       |
|--------|--|-------|
| 473.   | Dress shields of cotton and rubber.....dozen pairs   | 1.20  |
| 474.   | Articles, n. e. s., made of textiles of rubber and cotton or cotton textiles waterproofed with rubber (n. w.).....kilo | 0.45  |
| 1094.  | Tubing of rubber or gutta percha, combined or not with other material, with or without accessories (n. w.).....kilo    | 0.60  |
| 1094b. | Rubber hat forms (n. w.).....kilo  | 0.60  |
| 1094c. | Mats and matting (n. w.).....kilo  | 0.25  |
| 1094g. | Rubber type and stamps (n. w.).....kilo  | 1.50  |
| 1094h. | Rubber erasers (n. w.).....kilo  | 0.80  |
| 1094i. | All other articles of soft rubber not elsewhere mentioned (n. w.).....kilo   | 1.00  |
| 1095a. | Rulers of hard rubber combined with other material.....dozen   | 0.50  |
|        | And in addition (n. w.).....kilo   | 1.00  |
| 1095b. | Hard rubber pen holders.....dozen  | 0.50  |
|        | And in addition (n. w.).....kilo   | 1.00  |
| 1095c. | Fountain pens, with or without gold nibs and with parts or ornaments of gold, silver, mother-of-pearl, etc.....dozen   | 12.00 |
| 1095d. | The same, with gold nibs and not ornamental.....dozen  | 6.00  |
| 1095e. | The same, plain with other nibs and styles of hard rubber.....dozen  | 1.50  |
| 1095f. | Hard rubber trays for developing or other purposes (n. w.).....kilo  | 0.75  |
| 1095h. | Hard rubber cigar or cigarette holders, and mouth pieces for pipes (n. w.).....kilo                                    | 3.00  |
| 1095i. | Hard rubber combs and hair ornaments (n. w.).....kilo  | 2.00  |
| 1095j. | Other articles of hard rubber not specially mentioned (n. w.).....kilo   | 2.50  |

<sup>1</sup>Tare allowance 10 per cent.

## ST. PIERRE AND MIQUELON.

Equivalent.—Franc, nominal value 20 cents; kilo, 2.2 pounds; n., net weight.

- | Tariff No. |  | Duties, Francs. |
|------------|--|-----------------|
| 245.       | India rubber, gutta percha and asbestos manufactures of any style, including clothing, made up or not.....100 kilos n. | 70.00           |
| 246.       | Boots and shoes of rubber or rubbered tissues.....100 kilos n.   | 40.00           |

## HAITI.

Equivalents.—Gourde, 96½ cents; ell, 46.77 inches.

- | Tariff No. |  | Duties, Gourdes. |
|------------|--|------------------|
| 355.       | Rubber slippers, or slippers with rubber soles.....dozen pairs | 0.75             |
| 413.       | Mackintosh coats.....each                                      | 1.00             |
| 555.       | Garter elastics.....ell  | 0.02             |
| 556.       | Boot elastics.....ell  | 0.04             |
| 710.       | Erasers.....dozen  | 0.05             |
| 1365.      | Rubber stamps.....each   | 0.10             |

The following surtaxes are levied on imports: 50 per cent, 33½ per cent, in gourdes, and 25 per cent in gold. A law of August 20, 1909, authorizes the government to levy a further surtax of 15 per cent on the aggregate import duties.

## BRAZILIAN CONSULAR INVOICE RULING REVOKED.

The American Chamber of Commerce announces a successful outcome of its fight against the adoption of the Brazilian Consular Invoice Bill, which was to go into effect October 1. The ruling provided that consular invoices should contain a clear definition of the goods shipped, instead of general terms, as previously. Upon the adoption of this rule, general designations, such as "cotton goods, not specified," "chemical products, not specified," etc., would have been prohibited. The exporter of chemicals would have been obligated to specify each product by its scientific or commercial designation. It was required that the materials composing the article or entering into its manufacture be specified. In the case of textiles it would have been necessary to state the name of fibers or materials which entered into its fabrication, such as cotton, silks, linen, etc.

In short, the requirements of the proposed rule would have placed so great a burden on American exporters that it would have discouraged firms in developing their business with Brazil, and the thanks of the export trade are due the American Chamber of Commerce for its success in bringing about the annulment of this objectionable ruling.

## AMERICA'S ANNUAL TIRE BILL \$1,000,000,000.

In emphasizing the importance of more and better roads, M. O. Eldridge, director of roads of the American Automobile Association, states that forty million tires are required annually as equipment and renewals for the seven million passenger automobiles and motor trucks in use in the United States. At an average cost of \$25 each the total annual expenditure for tires is \$1,000,000,000. Hence it is high time to pay a little more attention to the effect of the various road surfaces on the motor vehicle instead of considering only the damage by the motor vehicle to the road.

## TIRES DELIVERED BY AIRPLANE.

The efficacy of rush deliveries by airplane was convincingly demonstrated recently when an aviator carried a shipment of seven Diamond tires from Seattle to Everett, Washington, to fill a hurry-up order. The delivery was made forty-five minutes after John K. Healy & Co., at Everett, put in a long distance call to the Seattle branch. The tires were carried on the right wing of a Boeing seaplane and were dropped directly in front of the Healy store as the plane went by.

## AMERICAN MOTOR CARS AND TIRES IN THE PHILIPPINES.

In the Philippines in 1918 there were registered 4318 automobiles of 114 different makes, carrying 22,817 passengers. Trucks numbering 567, able to carry 1052 tons of goods, or 6,345 passengers, were also registered. The makes were almost entirely American. As there are few railroads in the islands, automobiles are now becoming important in transporting freight, and British consuls are urging British manufacturers to compete for the business.



## What the Rubber Chemists Are Doing.

### The Nature of Vulcanization.<sup>1</sup>

By Dr. H. P. Stevens.<sup>2</sup>

Part II. (Continued.)

#### THE ACTION OF SOLVENTS ON VULCANIZED RUBBER.

PORTIONS of the four vulcanized samples were kept for 3 months at winter temperatures and other portions for the same period in an incubator at 30 degrees C. On examining the specimens for solubility in benzene, those specimens preserved at winter temperatures were somewhat less soluble, the specimen (2) now behaving similarly to specimen (3) when originally tested. Those specimens kept at 30 degrees C. were more altered, being still less soluble; thus (1) could no longer be dissolved in benzene on standing overnight and shaking. It was found, however, that all specimens dissolved to a large extent in benzene when left long enough immersed in the solvent.

It is generally agreed that it is exceedingly difficult to remove the last traces of free sulphur from an unvulcanized mixture of rubber and sulphur. Thus the following figures were obtained on the analysis of an unvulcanized mixture of 90 parts of rubber and 10 parts of sulphur before and after extraction for one week:—before extraction, 9.84 per cent sulphur. After extraction, 0.13 and 0.12 per cent sulphur.

The unvulcanized mixture dissolved more readily in benzene than sample (1) above. A difference could be detected in the physical properties so that it may be said that sample (1) showed the effect of vulcanization to a slight degree.

**SOLVENT ACTION OF BENZENE ON FULLY VULCANIZED RUBBER.** Although benzene has but little solvent action on fully vulcanized rubber in the cold, I find that, by prolonged extraction of the acetone-extracted rubber in a Soxhlet at the boiling point, a considerable proportion may be dissolved. The extracted rubber tends to solidify on the sides of the flask in which the solvent is boiled, but part remains in solution. On evaporation of the benzene, the rubber remaining no longer dissolves appreciably when fresh benzene is added and set aside in the cold or the liquid boiled.<sup>3</sup> In this respect the solution of vulcanized rubber obtained resembles that produced by the action of ultra-violet rays on a solution of raw rubber and sulphur in benzene (Helbronner and Bernstein, "*Comptes Rendu*," 1914, 158, 1343). The recovered rubber is of inferior physical properties. The following experiments were made to ascertain whether it was possible to separate vulcanized rubber into parts containing different proportions of "combined" sulphur.

Two samples of vulcanized rubber, A and B, were extracted with acetone at the boiling point for one week and the combined sulphur estimated. Parts of the extracted rubbers were dried, weighed, and similarly exhaustively extracted with benzene at the boiling point for one week. The extracted rubber was dried and weighed, and the sulphur estimated in the residue.

Benzene extract: (A) 30.8 per cent; (B) 13.7 per cent. Sulphur content of residue before benzene extraction: (A) 3.80, 3.80 per cent;<sup>4</sup> (B) 8.64, 8.77 per cent. Sulphur content of residue after benzene extraction: (A) 3.85, 3.86 per cent; (B) 8.35 per cent.

It will be seen that, although an appreciable proportion of the vulcanized rubber was dissolved by the benzene, the residue of A contains the same percentage of sulphur as the original acetone-extracted rubber, and the residue of B almost as much.

The benzene extractions were now repeated with portions of the acetone-extracted rubbers, A and B, which had been put aside for 2—3 weeks in the dark. The benzene extracts were (A) 53.3 per cent; (B) 53.1 per cent.

That is to say, the benzene-soluble had increased to over 50 per cent in the course of aging. I have already drawn attention (8th International Congress of Applied Chemistry, 1910, 25, 585; "*Kolloid Zeitschrift*," 1914, 14, 96) to the rapid deterioration that rubber undergoes after it has been extracted with acetone, particularly when vulcanized. Such "perished" or "resinified" rubber is readily soluble in benzene. In the above cases the extract had the physical properties of a rubber rather than of a resin, although it underwent a further change on keeping, becoming brittle and "resinous." It was also found that, on keeping the above-mentioned acetone-extracted rubber for 5—6 weeks, it dissolved completely in benzene with the exception of a small amount of a flocculent precipitate, probably due to the protein constituent of the original rubber. The benzene solution when evaporated gave a varnish-like film, moderately hard but inelastic. Portions of the extracted rubber and the extracts of A and B were analyzed.

The extracted rubber contained (A) 3.57, 3.59 per cent; (B) 8.57, 8.38 per cent sulphur; and the benzene extracts (A) 3.34, 3.36 per cent; (B) 8.09, 8.22 per cent sulphur. In both cases the extract contained slightly less sulphur than the extracted rubber. There was also an apparent loss of sulphur during the aging of the acetone-extracted rubber. Some weeks later a portion of the acetone-extracted rubber, A, then aged and perished, was found to contain 3.32 and 3.33 per cent sulphur. These figures compare with 3.80 per cent originally present in the acetone-extracted rubber, A.

As the foregoing results show that the solubility in benzene of an acetone-extracted vulcanized rubber depends on the period that has elapsed since the rubber was subjected to extraction with acetone, it was desirable to ascertain in what degree a sample freshly extracted with acetone dissolved in benzene.

A freshly vulcanized sample of rubber, C, was extracted with acetone for one week and immediately extracted with benzene for a like period. It yielded 10.9 per cent of benzene extract. The original acetone-extracted rubber contained 3.80, 3.70 per cent of sulphur, and the benzene extract 3.68 per cent.

The residue was then immediately reextracted with acetone and gave a small extract amounting to 1.7 per cent containing 3.77, 3.82 per cent sulphur. It appeared that the process of benzene extraction, or the removal of the benzene preparatory to extraction with acetone, had produced some degradation of the rubber, as it then yielded 1.7 per cent to acetone although previously exhaustively extracted with acetone. There was no appreciable variation in the sulphur content.

A portion of the original rubber, C, was also extracted with benzene without previous acetone extraction. The extract consisted almost entirely of sulphur. The residue contained 3.90, 3.97 per cent sulphur.

These figures are a trifle higher than for the acetone-extracted rubber. The fact that very little rubber was extracted by the benzene seems to indicate that vulcanized rubber with this proportion of "combined" sulphur is almost insoluble in benzene and only dissolves when degraded or oxidized, and that such degradation takes place rapidly when exposed to air after acetone extraction or during the acetone-extraction process itself.

<sup>1</sup> Continued from THE INDIA RUBBER WORLD, October 1, 1919, page 22.  
<sup>2</sup> Dr. H. P. Stevens in "The Journal of the Society of Chemical Industry," July 15, 1919.

<sup>3</sup> The rubber sometimes dissolves when covered with benzene and set aside for two or three months.

<sup>4</sup> Here and subsequently duplicate figures give the results of duplicate analyses.

The stability of a vulcanized rubber varies with the sulphur content of the acetone-extracted rubber, that is, the "combined" sulphur. I have shown by physical tests ("Journal of the Society of Chemical Industry," 1916, 872; 1918, 395 r and 340 r), that a vulcanized rubber of this type is fairly stable over a period of 2-3 years under ordinary atmospheric conditions when the coefficient\* does not exceed 3. With higher coefficients, such as 6 or 7, decomposition sets in quickly, so that the rubber is brittle or "perished" in a few weeks. It was therefore of interest to compare the behavior to benzene of vulcanized rubber both with relatively low and high coefficients. A has a relatively low coefficient (about 4.3). To compare with A, a rubber, D, was taken which after one week's extraction with acetone gave 9.36, 9.42 per cent sulphur. It was placed in a desiccator for 26 days and the sulphur redetermined. Sulphur=7.41, 7.63 per cent, that is to say, an apparent loss of nearly 20 per cent of sulphur in 21 days. This compares with an apparent loss of approximately 12 per cent in several weeks for sample A.

A great part of this apparent loss is explained by an increase in weight which was found to take place while the rubber was aging.<sup>†</sup> To obtain uniform results, aging was carried out in an incubator at 30 degrees C. A vulcanized rubber, E, was extracted with (1) alcohol one week and acetone one week, (2) as (1) followed by benzene extraction for one week, and (3) benzene extraction only for one week. The extracted samples were dried at a low temperature for a few hours and analyzed without delay. (1) 4.05, 3.95; (2) 4.10, 3.89; (3) 3.90, 3.97 per cent sulphur. These figures show that the vulcanized rubber was in all cases exhaustively extracted and contained no sulphur soluble in organic solvents. The extracts consisted almost entirely of sulphur.

Portions of (1) and (2) were weighed after extraction and placed in the incubator at 30 degrees C. They showed the following increases in weight:—

Days Aging.	(1) Per Cent.	(2) Per Cent.
25 .....	14.7	14.0
49 .....	19.2	18.7

At this stage the specimens contained (1) 3.49 per cent, (2) 3.38 per cent of sulphur.

Assuming the apparent loss of sulphur to be due entirely to the increase in weight, the calculated figures would be (1) 3.35 and (2) 3.37 per cent. During aging, vulcanized rubber emits a peculiar odor and gives off acid vapors due to a trace of a volatile product containing sulphur. When passed into water, the substance is retained and the solution reduces ammoniacal silver nitrate. A trace of sulphur is therefore lost in a volatile form.

#### Conclusions.

(1) No sharp distinction can be drawn between the "solubility" and "insolubility" of vulcanized rubber in organic solvents.

(2) The more fully the rubber is vulcanized, that is, the higher the percentage of "combined" sulphur, the less is the tendency to dissolve.

(3) Fully vulcanized rubber, such as that containing 3-4 per cent of "combined" sulphur, is almost insoluble in benzene.

(4) Vulcanized rubber rapidly oxidizes after extraction with alcohol or acetone, and becomes soluble to an increasing extent in benzene. "Overcured" rubber with 9-10 per cent of combined sulphur oxidizes more rapidly than rubber with 3-4 per cent of combined sulphur.

(5) Vulcanized rubber recovered from the solution in benzene becomes almost completely insoluble in benzene, provided the

original rubber was not oxidized (perished). This recovered rubber possesses the nature and general physical properties of vulcanized rubber.

(6) Vulcanized rubber dissolves more readily in benzene the more it is oxidized. At the same time the recovered rubber becomes more inelastic or "resinous" and dissolves more readily in benzene.

(7) The increase in weight due to the oxidation of acetone-extracted vulcanized rubber fully accounts for the apparent loss of sulphur which takes place. But a trace of sulphur is lost in the form of a volatile product of an acid and reducing nature and containing sulphur.

(8) Extraction with benzene does not allow of the separation of a vulcanized rubber into parts vulcanized to different degrees having different coefficients.

## CHEMICAL PATENTS.

### THE UNITED STATES.

**PROCESS OF MAKING WATERPROOFING COMPOSITIONS**, comprising heating melted wax, a resinous substance, and dissolved rubber to about 305 degrees F., adding to the mass at 140 degrees F. a resinous substance dissolved in alcohol and a light hydrocarbon oil, then raising the temperature of the mass to about 180 degrees F. (the amount of light hydrocarbon oil added being sufficient to dilute the mass to the desired degree); finally adding to the mass, while at 60 to 80 degrees F., carbon bisulphide. (Guy M. Garlick, Kalamazoo, Michigan, assignor to William S. Mitchell, Gary, Indiana. United States patent No. 1,315,109.)

**WATERPROOFING COMPOSITION**, consisting of paraffine wax, dissolved rubber, a resinous substance dissolved in alcohol, a light hydrocarbon oil, and carbon bisulphide. (Guy M. Garlick, Kalamazoo, Michigan, assignor to William S. Mitchell, Gary, Indiana. United States patent No. 1,315,110.)

**PROCESS AND PRODUCTS OF TREATING VULCANIZED OILS** comprising the depolymerizing of a vulcanized oil and repolymerizing the product to a plastic material without vulcanization, producing a product that is similar in elasticity and plasticity to gum chicle. (Walter O. Snelling, Pittsburgh, Pa. United States patent No. 1,315,246.)

**PROCESS OF MAKING TIRE FILLERS** consisting of subjecting to vulcanization in a mold by heat and pressure a mass composed of small particles of soft rubber, rubber cement, gasoline and kerosene. (Edward F. Aycock, Midlothian, Texas. United States patent No. 1,315,652.)

**IMPREGNATING FIBROUS MATERIAL**. A new material for articles of footwear comprising a sheet of felted material, and a stiffening composition of resin, oxidizable oil and a drier incorporated for the purpose of making the product transpiratory. (William B. Wiegand and Walter Uffelman, Montreal, Quebec, Canada, assignors to Rubber Regenerating Co., Naugatuck, Conn. United States patent No. 1,317,340.)

### THE UNITED KINGDOM.

**VULCANIZING RUBBER WITH SULPHUR**, accelerated by compounds resulting from the interaction of strong alkalis or strongly basic substances and monohydroxy derivatives of benzene or its derivatives. Sodium phenate is one such compound in which the hydrogen of the hydroxyl groups is replaced by the metal or equivalent radical. In others the meta or para-cresol or beta-naphthol may be the acidic group. (North British Rubber Co. and B. D. Porritt, Castle Mills, Fountainbridge, Edinburgh. British patent No. 129,798.)

**VULCANIZING INDIA RUBBER IN THE COLD** by alternate treatment with sulphur dioxide and hydrogen sulphide, the two gases yielding sulphur within the substance of the rubber. A solution of hydrogen disulphide in benzene may be used instead of the gas after treatment with sulphur dioxide. The process may be used for the vulcanization of rubber dissolved in a solvent

\*The coefficient is the percentage of combined sulphur calculated on the raw rubber present in the vulcanized rubber.

†In a similar manner a rubber not acetone-extracted but vulcanized to give a relatively high coefficient (say over 4) shows a loss of combined sulphur on aging owing to an increase in the weight of the rubber due to oxidation which accompanies "perishing." Previous acetone extraction of the rubber increases the tendency to oxidation and "perishing" and consequently the apparent loss of combined sulphur is more marked.

such as benzene. (S. J. Peachey, 5 Yew Tree Road, Davenport, Stockport, Chester. British patent No. 129,826.)

**PUNCTURE SEALING FLUID** consisting of a binding agent of rubber, sugar, and sulphite-cellulose lye or pine-tree essence or both. Earthy constituents, such as magnesia or talc, ground rice, or a solution of casein may be added. (P. Warmund, Zurich, Switzerland. British patent No. 130,342.)

#### THE FRENCH REPUBLIC.

**PROCESS FOR INSULATION OF ELECTRICAL CONDUCTORS** whereby enameling of the metallic conductor is substituted for the usual coating of tin for the protection of the insulation from the action of the copper conductor with the sulphur in the insulation. (A. Grammont. French patent No. 490,890.)

**VULCANIZATION.** New accelerators for vulcanizing rubber. (S. J. Peachey. French patent No. 490,965.)

#### KAOLINITE.

French industry is making large use of Kaolinite in the manufacture of rubber and other plastic materials. For this purpose a special quality of extreme whiteness and fineness, absolutely free from lead and iron is prepared. The specific gravity is from 2.30 to 2.40. It is recommended as a substitute wholly or in part for zinc oxide.

#### A CORRECTION.

Donald F. Cranor, author of the paper on "The Effect of Organic Acceleration on the Vulcanization Coefficient," read at the September meeting of the American Chemical Society, corrects the report of his paper printed in these columns in the October issue, as follows:

For the purposes of investigation the author deliberately selected a sample of brown crêpe having unusually poor vulcanizing properties because such a sample best served to bring out the point which it was desired to make. The statement reported, that brown crêpe will not cure satisfactorily without the use of accelerators, is not justified in view of the fact that many brown crêpe lots are excellent and have good curing properties. Mr. Cranor discussed the action of the addition product of dimethylamine and carbon disulphide instead of thio-carbanilide as reported.

#### NEW JERSEY CHEMICAL SOCIETY PLANS INDUSTRIAL SURVEY.

At a meeting of the New Jersey Chemical Society held in Newark October 13, 1919, the plan of asking the State Commissioner of Labor to promote an official survey of state industries, and particularly the chemical industries, was considered favorably. The object is to make known to the general public the exact facts as to the natural resources of New Jersey and the extent and character of its chemical industries, and thereby to advertise New Jersey as a chemical center and encourage the consumption of American made, and especially Jersey made, products.

#### RUBBER AND FABRIC SHOES POPULAR.

Manufacturers of part-rubber shoes are preparing to increase their competition against leather and part-leather shoes next year. Rubber and fabric shoes have found many new friends this past season among both men and women. They have been more attractive and serviceable than formerly and the prices make them especially desirable. Very high-grade tennis shoes intended to rival leather footwear at lower prices will be brought out next summer. Heavy work shoes of rubber, fabric and fibre are rapidly finding favor, so that, the two extremes having been supplied, a serviceable shoe for wear at any time should complete the chain of good footwear provided by the rubber industry, at reasonable prices. The high cost of leather shoes also seems likely to increase the wearing of rubbers by women in order to protect such expensive footwear.

#### LABORATORY APPARATUS.

##### COMBUSTION AND DEFLAGRATION SPOON.

A SIMPLE device or laboratory tool is the combined combustion and deflagrating spoon shown in the illustration. The container or spoon is not attached but can be transferred to either



COMBUSTION AND DEFLAGRATION CONTAINER.

ring of the device, permitting the use of the spoon either vertically or horizontally. (Central Scientific, 460 East Ohio Street, Chicago, Illinois.)

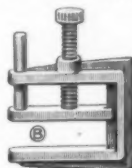
##### GAS HEATED GLASS CUTTER.

A very convenient tool for laboratory use has been devised by Lieutenant K. H. Parker, formerly of William Jewell College. It



PARKER GLASS CUTTER.

is known as the Parker glass cutter. In general appearance it resembles a hollow gas-heated soldering iron. It is attached to the gas supply by means of rubber tubing, the flow being adjusted until the flame strikes back. When sufficiently hot the cutter is used to lead a crack in the glass in any direction. A deep file cut serves as a starting point for the crack.



LABORATORY CLAMP.

in service. (Central Scientific Co., 460 East Ohio street, Chicago.)

##### SCREW CLAMP.

The illustration shows an improved screw clamp, closed, that furnishes a flat bearing surface. It is particularly effective and convenient

##### AUTOMATIC BURETTE.

A simple automatic burette is shown in the accompanying figure. It is especially useful with solutions which are reduced on extended exposure to the light. At the end of a series of titrations the liquid can be run back into a bottle of dark colored glass. With ordinary solutions it will also be found useful especially in the presence of dust or fumes. It has the advantage of being filled from the bottom and regardless of the amount of solution used it is unnecessary to wait for the tube to drain.



AUTOMATIC BURETTE.

It is made from an ordinary burette. The glass stop-cock is replaced by a larger cock, the lower end of which reaches to the bottom of the bottle. The original stop-cock is lengthened by a short piece of glass tubing, sealed to the burette tube just above the larger cock and bent to form a faucet. The top of the graduated tube is fitted with a small tube to which is attached a piece of rubber tubing, which is used to draw up the liquid into the burette to any desired level. A small curved tube through the stopper regulates the pressure within the bottle. ("The Chemist-Analyst.")

RUBBER GOODS WERE INCLUDED IN THE LOAD OF THE FIRST Handley-Paige airplane to engage in the parcel service between Paris and London. The plane left Hounslow at noon on September 2 and the goods were delivered to the companies in Paris at 6 o'clock that afternoon.



## Activities of The Rubber Association of America.

**TIRE DIVISION.** The joint Executive Committee of the Pneumatic and Solid Tire Manufacturers' Divisions held its regular monthly meeting at the Association offices, on October 16, there being an almost complete attendance. A docket containing a number of important subjects was disposed of.

**MECHANICAL RUBBER GOODS MANUFACTURERS' DIVISION.** On October 21 the regular monthly meeting of the Executive Committee of the Mechanical Rubber Goods Manufacturers' Division was held at the Yale Club.

**TRAFFIC DEPARTMENT.** In keeping with the custom, since the organization of the Traffic Division, to hold every third or fourth meeting at Akron for the convenience of members in that district, the Traffic Department held its regular meeting October 22 and 23 at the Akron City Club. The usual heavy docket, including many timely and important subjects, was disposed of.

Of particular interest is the completion of arrangements for personal attention to the Association's traffic and commerce questions by E. S. Ballard, an experienced commercial lawyer of the firm of Butler, Lamb, Foster & Pope, Cleveland, Ohio. This arrangement will provide a most satisfactory means for handling the legal affairs of the Association's traffic and commerce work.

**NEW MEMBERS.** At a meeting of the Executive Committee on September 26, the following named firms were elected to firm membership in the Association:

J. Aron & Co., Inc., 95 Wall street, New York City.

Woven Steel Hose & Rubber Co., Trenton, New Jersey.

Madison Tire & Rubber Co., Inc., 30 East 42d street, New York.

**REISSUE OF THE "INDEX TO THE MANUFACTURES OF THE PRODUCTS OF THE RUBBER INDUSTRY."** The work of securing a complete response to the questionnaire sent to the industry to develop the information upon which to base a reissue of the "Index to the Manufacturers of the Products of the Rubber Industry," is progressing slowly but steadily, and the Association hopes to complete the work within the very near future.

**MAP SHOWING LOCATION OF FIRM MEMBERS.** Last spring the Executive Committee authorized the preparation of a map to show the location of firm members of the Association over the United States, and the map is now in preparation and, when ready, copies will be distributed to Association members. It is the thought of the Executive Committee that a map of this sort will make it possible for those who may be interested to visualize quickly the rubber industry in the United States and Canada, so far as centralization and geographic location are concerned.

### A COMMUNICATION FROM THE RUBBER GROWERS' ASSOCIATION, LIMITED.

New York, October 2, 1919.

To the firm members of The Rubber Association of America, Inc.:

There is attached a copy of a circular prepared by the Rubber Growers' Association, Inc., London, respecting the Rubber Uses Development Fund and the prize contest which that association has in contemplation. The circular explains itself.

The proposal of the Rubber Growers' Association was given consideration by the Executive Committee of this organization at a meeting on September 26, and I was directed to distribute copy of the circular to the entire membership of this association with the advice that if they found it convenient to make a contribution to the fund they might do so through this organization, which will transmit the total of the contributions to the Rubber Growers' Association with a statement of the donors thereof.

In the interest of ease and safety in handling the contributions it is requested that checks be made payable to The Rubber As-

sociation of America, with a statement of the purpose for which they are intended, and this office will in turn make out a check to the Rubber Growers' Association for the total.

Additional copies of the circular may be had if desired and you may be sure that this office will give every attention to any of the detail which may develop in connection with the contributions from our members to this fund.

A. L. VILES, General Manager.

### THE RUBBER GROWERS' ASSOCIATION (INCORPORATED).

38 EASTCHEAP, LONDON, E. C. 3, JULY 23, 1919.

#### Rubber Uses Development Fund.

Dear Sir(s):

My Council have decided to open a "Rubber Uses Development Fund," for the purpose of extending the present uses or encouraging new uses of rubber, and invite contributions from members and others interested in the production of rubber.

It is desired that a minimum of £10,000 should be raised, and in the first place to inaugurate a prize scheme in the terms of the accompanying draft particulars. It is proposed to offer £5,000 in prizes; to expend about £2,000 in advertisements, and, if necessary, a sum of £3,000 upon the work entailed in receiving, investigating and adjudicating upon the suggestions sent in, and generally in any direction which might be likely to increase substantially the economic demand for the raw material.

The continued success of the plantation rubber industry will depend on the increasing demand for the commodity, and, having regard to the size of the industry and the amount of British capital involved, my council venture to express the hope that the proposals outlined above will meet with liberal response from all interested in the future welfare of the industry.

The following donations have been given or promised, subject to a minimum of £10,000 being raised:

The Rubber Growers' Association .....	£1,000	0	0
Messrs. Harrisons and Crossfield, Ltd. ....	1,000	0	0
Straits Rubber Group .....	1,000	0	0
Messrs. Guthrie & Co., Ltd. ....	250	0	0
Messrs. Edward Boustead & Co. ....	200	0	0
Colombo Commercial Co., Ltd. ....	105	0	0
Grand Central (Ceylon) Rubber Estates, Ltd. ....	105	0	0
London Asiatic Rubber and Produce Co. ....	105	0	0
Seaford Rubber Co., Ltd. ....	100	0	0
Rubber Estate Agency, Ltd. ....	52	10	0
Tangkah Rubber Estate, Ltd. ....	52	10	0
Batu Caves Rubber Co., Ltd. ....	50	0	0

Contributions or promises should be forwarded to the association as soon as possible, so that the preliminary arrangements in connection with the prize scheme can be made immediately. Any suggestions relating to the scheme, which you may care to submit, will be welcomed and will receive careful consideration.

FRANK G. SMITH, Secretary.

### AND NOW TO CURB TIRE THEFTS.

Stealing automobiles has become a profitable business throughout the country and one that is carried on with far less risk than other forms of thieving involving commensurate returns.

In Massachusetts new laws to check this evil have recently become effective. The punishment for stealing, receiving or concealing motor vehicles has been made a State prison sentence of five to ten years. The life history of every motor vehicle owned in Massachusetts will now be recorded at the State House. Motor vehicle dealers of all sorts are licensed and must report all their transactions. Private owners must give to the police advance notice of intended sale. A clear title will henceforth be required as in real estate transfers. So complete will be the record and cross references that it will be extremely difficult for a stolen car to be registered again without the fact of its theft becoming known.

Stealing tires is as common as stealing cars, and it is highly profitable. Two new high-grade, non-skid, cord tires from a large car are often worth \$150 and pneumatic truck tires cost from \$120 each upward. So bold are tire thieves that they often jack up a car and remove tires from the wheels. Relatively few motorists keep a record of the serial numbers of their tires, making recovery difficult. Moreover, the tires are often rebuilt and identification marks destroyed.

With tires averaging \$25 each and running up to \$175 or more; with a car's complement of tires valued at \$100 to \$750 and thefts rapidly increasing, when will special legislation be devised to check this form of robbery?

## Peace Problems and Progress.

### PROPOSED CHANGES IN BRITISH PATENT LAW.

**A** BILL now before the British Parliament proposes to cancel the compulsory working and license clause of the Patent Act of 1907 and to substitute a series of alternative provisions. Under this bill any interested person may apply to the Comptroller, alleging that there has been an abuse of the monopoly rights under a patent and asking for relief. Five sets of circumstances are specified as constituting abuse; they are:

- (1) Non-working on a commercial scale in the United Kingdom without satisfactory reason.
- (2) Prevention or hindering of working in the or on behalf, or with the consent of, or without effective interference by, the patentee.
- (3) Demand for a patented article in the United Kingdom not met to an adequate extent and on reasonable terms.
- (4) Any trade or industry prejudiced by refusal of the patentee to grant licenses on reasonable terms.
- (5) Any trade or industry prejudiced by conditions attached to the patentee to the purchase or use of the patented article.

The Comptroller is to be vested with remedies, also five in number, viz.:

- (1) He may endorse the patent with the words "Licences of Right," after which anyone can obtain a license on complying with certain conditions.
- (2) He may order the grant of a non-exclusive license to the petitioner.
- (3) He may, in certain circumstances, order the grant of an exclusive license to the petitioner, or to some other person.
- (4) He may revoke the patent.
- (5) He may make no order.

The bill proposes to lengthen the life of British patents to 16 years, to restore the term of provisional protection to 9 months and extend the time for acceptance to 15 months. Patents unworkable during the war and patents of addition are dealt with. In actions for infringement patents are to be upheld for as much as is good without regard to the invalidity of any other claim in the specification. The grounds upon which opposition may be entered are also considerably extended.

### A NEW GERMAN TRADE SERVICE.

The German Government has established the Foreign Trade Bureau of the German Ministry for Foreign Affairs for the purpose of gathering, assimilating, and disseminating such commercial information as may be of use to Germany in the promotion of foreign trade. A council of 25 to 30 members with Dr. Weidenfeld, formerly professor of economics at the University of Halle, as chief, will direct the affairs of the Bureau and have supreme control of all matters within its jurisdiction.

Commercial information received by the Foreign Office, the consulates and legations, will be published on the day of receipt, or if confidential will be transmitted to interested persons. Members of both the diplomatic and consular services will hereafter receive an important part of their training in the Foreign Trade Bureau.

### A NATIONAL ORGANIZATION OF GERMAN INDUSTRIES.

The apparent need of industrial organization in Germany has resulted in the formation of the National Union of German Industry, to represent and promote German industries, to bring about a uniformity of action, and to create a community of interest with the workmen.

As a consequence there now exist three great groups in the country which represent the economic life and which will provide the basis for the necessary reorganization of the economic system. They are (1) the workmen's trade unions, which have been recognized by the employers; (2) the associations of employers who were more or less connected with the former Union of Manufacturers and the Federation of manufacturers; and (3) the Imperial Union of German Industry. The industries are to be divided into twenty trade groups.

It is proposed to constitute a general committee composed of 140 representatives from the trade groups, 30 from agricultural and local associations, and 10 from individual undertakings, to-

gether with 10 other persons to be suggested by the council at a general meeting. It will be seen that the scheme aims at the centralization of the representation of German industries on economic matters and in the relations between the employers and the workmen.

### TAXATION AND THE HIGH COST OF LIVING.

In suggesting the appointment by the Government of a non-political body of experts to study the effects of the various kinds of taxation which have been in force during and since the war, Otto H. Kahn points out in a very informing booklet that the unscientific system of taxation adopted in this country since 1917 has played a considerable part in boosting prices to their present excessively high levels. His belief that the entire matter of excess profits and income taxes should be subjected to unprejudiced and competent critical review with the idea of making recommendations to Congress finds approval in many quarters, and most financial experts agree that a general staff on economic and financial strategy during the reconstruction period would prove as beneficial as the Army and Navy boards of experts have in wartime.

### THE WORKERS' SHARE OF PROFIT AND RESPONSIBILITY.

Profits without responsibility appears to be the workman's idea of the so-called partnership plan now advocated by organized labor. A voice in management is demanded which permits the workers to determine practically their own wages and hours, and also to distribute profits without bringing to the combination any responsibility, either financial, legal or moral. This means complete unionization, domination and control of industry, and under such a régime industry will die.

There is much to be recommended in a co-partnership between capital and labor, but it must be a real partnership in every sense, with labor bearing its share of the responsibility. Profit-sharing is really the crux of the matter, and the plan being advocated by George W. Perkins benefits both employer and employe, eliminating those features of profit-sharing which have made it a failure in numerous instances.

Assuming that every business must, first of all, earn operating expenses, depreciation and a fair return on honest capitalization, and that the compensation paid to employes is for the purpose of earning enough to meet their obligations, he proposes that any profits over and above such sum be divided on some fair percentage basis between the capital used and the employes engaged, in the latter case according to the compensation of the individual worker. That these profits may remain in the business a reasonable time, he proposes that capital's share be carried to surplus, and that labor's share take some form of security representing an interest in the business to be held for three to five years. Thus an interest and responsibility on the part of labor is created and the baneful effects of profit-sharing on a cash basis are eliminated. Such a plan has already proved successful in several instances; it is eminently fair, and it represents the limit of safety in any partnership between capital and labor.

### A BRITISH ESTIMATE OF RUBBER ACREAGE.

Addressing the Rubber Plantations Investment Trust in London lately, the chairman, Mr. G. Croll, estimated that the area of land under plantation rubber at the end of December, 1918, was 2,750,000 acres, which on a basis of 400 pounds an acre should yield 500,000 tons of rubber a year. He had hoped that a use would be found first from the growth of the automobile industry in the United States, where 1,000,000 cars were registered in 1913; 2,250,000 in 1916 and, according to the "Board of Trade Journal," 6,000,000 in July, 1919.

## New Machines and Appliances.

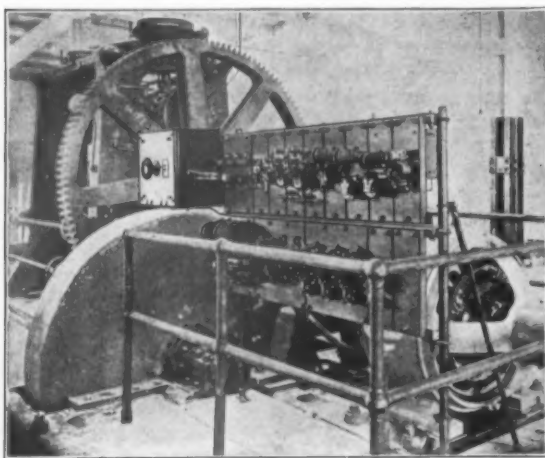
ELECTRICALLY DRIVEN CALENDER AND MIXERS EQUIPPED WITH SAFETY DEVICES.

ONE of the first considerations of the rubber engineer in equipping a modern plant is the selection of motors, controllers, and safety devices to secure maximum protection to the workmen and uniformity of finished product.

In the typical installation here shown small constant speed squirrel-cage motors, not requiring any special control apparatus, are used for most of the machines; the three-roll calender, however, necessitated an adjustable speed, direct-current motor, special automatic controller, and certain safety features; while the three mixing mills are driven by a slip-ring motor, the liability of accident being reduced to a minimum through the installation of a magnetic clutch and brake operated by safety release switches.

Direct current is furnished to the calender motor by a motor-generator set consisting of a three-phase, 220-volt alternating-current motor and two direct-current generators. A three-wire, double voltage system is used with the two generators connected in series. The calender motor is supplied with either 230 volts by using the combined voltage of both generators, or 115 volts by using either generator singly. By means of the double voltage system and a field rheostat, a 4 to 1 speed ratio is obtained with the motor, and fine variation may be had at all speeds.

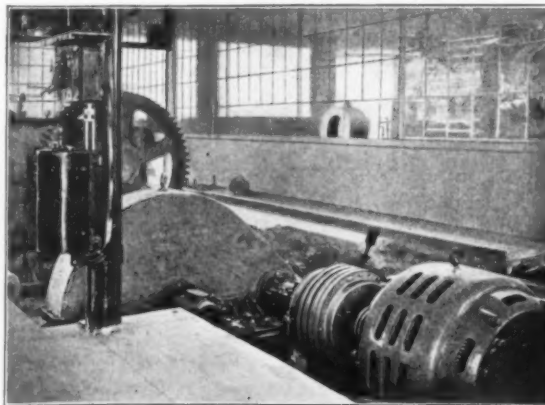
The motor is started by a push-button switch located conveniently on the calender. It is stopped by the slight movement of either of two cradle-operated switches situated on each side of the calender, or by a push-button safety switch or a push-button master switch, both of which are mounted on the calender. Each cradle has three positions, namely, horizontal, up, and down. The horizontal is the running position, the down



MAGNETIC CONTROL BOARD FOR CALENDERS.

effects an ordinary service stop, while an upward movement causes a quick stop by dynamic braking, accomplished by short-circuiting the motor armature through a resistance. The change from one voltage to the other is made by operating a push-button switch on the control board. The motor field rheostat, which is mounted on the left of the control board, is adjusted by hand, and is short-circuited by a push-button switch on the controller, thus allowing two different speeds—fast and slow—for each setting of the rheostat. The motor can be run in either direction by means of a reversing switch on the control board.

The three mixing mills, which do not require speed variation, are driven from one line shaft, by a 200-h.-p. slip-ring motor. By using sliding pinions for engaging the large gear wheels of each mixing machine, any of the mixing mills can be thrown out of gear when their service is not needed, but this method of stopping is too slow to be of any value as a safety device. The best



MAGNETIC CLUTCH AND BRAKE BETWEEN MOTOR AND MIXERS OPERATED BY RELEASE SWITCHES.

provision for safety would require that any mill in the line could be stopped quickly by some means within easy reach of each operator.

These requirements were met by inserting a magnetic clutch and brake on the line shaft between the motor and the first mill. Each mill is provided with cradle-operated switches for breaking the circuit energizing the magnetic clutch. Attached to the shaft on the side of the clutch next to the mills is a brake wheel which receives the brake band, which is tightened by the falling of a weight when magnetically released by the operation of one of the cradle switches. Therefore, the braking action is positive, and an accidental interruption of the circuit results in a safe condition. The instant one of the cradles is moved, the clutch is released and the brake applied. (The Cutler-Hammer Manufacturing Co., Milwaukee, Wisconsin.)

### RUBBER SOLUTION AND CEMENT MIXER.

#### THE EIMCO CEMENT CHURN.

Rubber cement making has grown in importance and volume during recent years, resulting in the development of special churns designed to reduce the working time and improve the product. For example the mixer here pictured is a strong, heavily built machine designed to stand hard work and the strain of high speed. The mixing tank is of cylindrical type and made of heavy boiler plate. It has a hinged cast-iron man-hole cover which makes the machine absolutely gas-tight and prevents the escape of solvent fumes.

A special patented agitator is one of the features which it is claimed reduces by one-half the time required to mix the product and also greatly improves the quality. The agitator is so designed that it scrapes every inch of the interior of the mixing tank; brings all of the solution into treatment and prevents any of the material from collecting in the corners, thus keeping the inside of the tank clean.

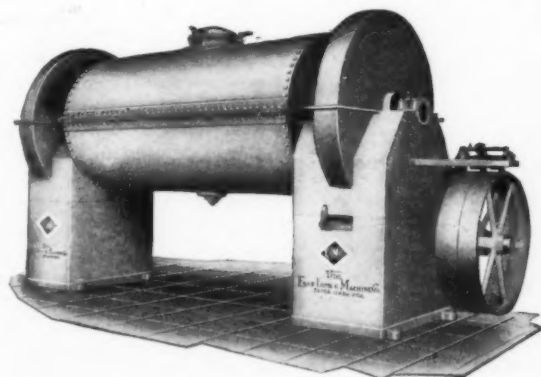
The speed arrangement permits using a slow mixing action at the start and an exceedingly high speed to finish the opera-



tion. This is another feature that helps materially to reduce the operating time.

The illustration shows the machine set up for operation and the type of agitator used in machines of 300 to 1,000 gallons capacity.

These machines are built in various sizes and types with single and double agitators to meet all requirements. Tilting trough



THE EIMCO CEMENT CHURN.

types are constructed with capacities of 50 to 200 gallons and are tilted to discharge their contents. The cylindrical or non-tilting types of 50 to 1,000 gallons capacity are discharged through bottom gates. (The East Iron & Machine Co., Lima, Ohio.)

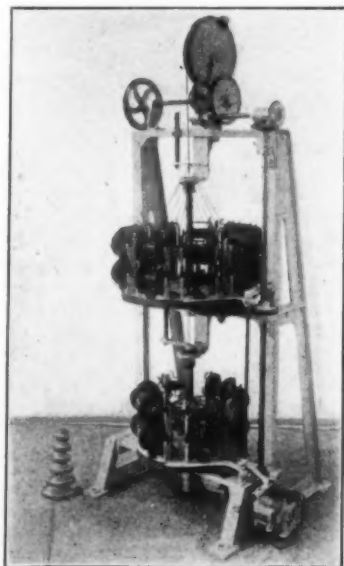
#### TWO-HEAD VERTICAL STRANDING MACHINE.

The accompanying illustration represents a 30-reel 2-head vertical stranding machine for stranding copper wires from No.

28 to No. 36 B. & S. gage. It is designed to take metal spools  $3\frac{3}{4}$  by  $2\frac{3}{4}$  inches, on which the manufacturers ship the wire, thus doing away with respooling. The lower head carries 12 reels and the upper head 18 reels. The heads are arranged to run in opposite directions at a ratio of 4 to 5, and also in the same direction at the same speed.

The machine is driven by tight and loose pulleys, and is equipped with a stop motion which stops the machine when any wire breaks or the reels run out. The tight and loose pulleys are 6 by  $1\frac{1}{2}$  inches and run 325 r.p.m. This gives a speed of the lower disk of 215 r.p.m.

and that of the upper disk 175 r.p.m. The take-up sheave is 8 inches in diameter, and a complete set of change gears is provided for different lays. The bench space of the machine is 2 feet 8 inches by 1 foot 9 inches. (New England Butt Co., Providence, Rhode Island.)



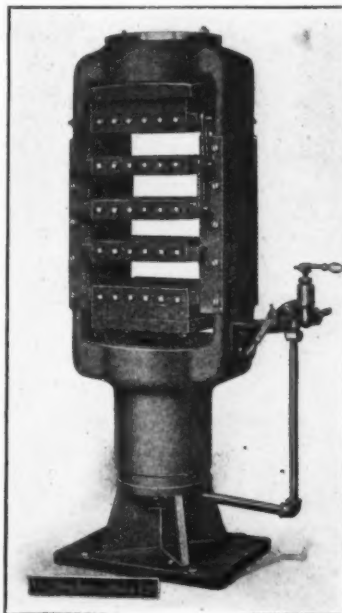
VERTICAL STRANDING MACHINE.

#### RODLESS HYDRAULIC VULCANIZING PRESS.

The rodless hydraulic press has been perfected to overcome the defects of the old style presses with threaded rods on which the nuts are constantly working loose, thereby throwing the

platens out of parallel, injuring the work, and forcing two of the rods to bear the entire load.

In the rodless press the cylinder, cheek pieces and top head are one solid open-hearth steel casting. The cylinder and lower face of the top head are machined at one setting, thus insuring perfectly parallel surfaces between the platens. This construction secures absolute rigidity as there are no parts to work loose. Another improvement over the ordinary press is found in the copper-lined cylinder which makes a perfect surface for the packing of the ram to slide upon. Without this copper lining the cylinder and ram in a short time become cor-



RODLESS PRESS VULCANIZER.

roded and rapidly wear out the packing requiring frequent replacement.

Where the platens are steam-heated, cooling ribs are cast upon those that contact with the head and ram platens, thus preventing overheating of the top head and ram.

To vary the opening of a rod-press, dependence is placed on adjustment of nuts on the rods. In the rodless construction a series of rings is placed between the top plate and the head. These are made in multiples of an inch, are instantly removable, and without adjustment the plates must come parallel. (The Charles Burroughs Co., 141 Commercial street, Newark, New Jersey.)

#### A NOVEL RUBBER CEMENT DISPENSER.

The rubber cement dispenser here shown has been recently perfected and will undoubtedly become popular with users of rubber cement, due to the saving of labor and conservation of cement obtained by the construction of this device.



THE McNUTT CEMENT CONTAINER.

These containers, ranging in capacity from one-half pint to one gallon, may be filled in the usual manner and closed by a screw cap, thus keeping the contents in good condition until used. The cement feeds from the bottom of the container to the brush cup, thereby permitting the use of settling compounds with uniform

results, avoiding the waste common to ordinary containers.

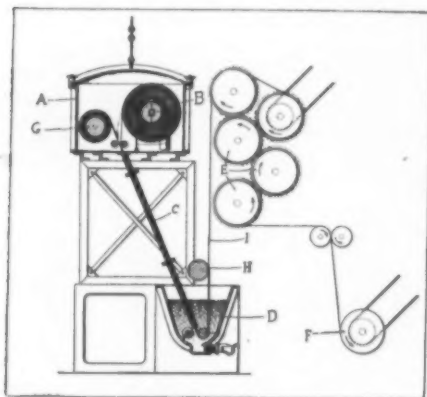
The brush is protected by being immersed in the cement when not in use and a disk that prevents the cement from reaching the handle of the brush, acts as a cover to the cement cup. (W. H. McNutt, 83 Chambers street, New York City.)

Index to "Rubber Machinery" will be sent free upon request.

## MACHINERY PATENTS.

## MACHINE FOR IMPREGNATING TIRE FABRIC.

**T**IRE fabric is subjected to vacuum and then passes by means of a channel through an impregnating chamber containing rubber solution that forms a seal for the channel.



TIRE FABRIC IMPREGNATOR.

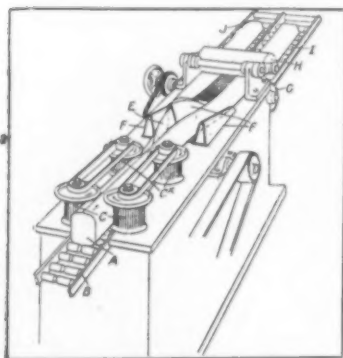
A vertical section of the apparatus is here shown, *A* being the vacuum chamber enclosing the fabric-roll *B*, and *C* is the channel communicating with *D*, the solution tank, *E* indicates the drying rolls and *F* the fabric wind up roller.

In operation, the free end of the fabric is fastened to a cross-bar attached to a pair of metal ribbons, the ends of which are coiled on roll *G*, the other ends passing downward through the channel and impregnating tank and are attached to the roll *H*, which is revolved by hand, threading the fabric through the apparatus. The fabric is then attached to the apron *I* which carries it between the drying rolls and finally to the wind-up roll.

(John E. Thropp and Peter D. Thropp, assignors to the De-laski and Thropp Circular Woven Tire Co., all of Trenton, New Jersey. United States patent No. 1,312,878.)

## MACHINE FOR SPLITTING EXTRUDED DOUBLE SOLID TIRES.

The double tire *A* shaped by extrusion through a die is fed along a roller track *B* by profiled rollers *C* and *CX* and severed



SOLID TIRE SPLITTING MACHINE.

longitudinally by a rotating disk *E* working in a guard *F*. This is provided with extensions adapted to divert the severed sections through a right angle to facilitate their delivery on roller tracks *I, J* by a roller *G* and coacting weighted roller *H*.

The rollers *C* and *CX* may be replaceable or mounted for lateral adjustment. Water may be supplied to the cutter *E* to facilitate cutting, and the cutter may be

laterally adjustable or replaced by a band knife. (Dunlop Rubber Co., C. Macbeth, and H. Willshaw, 14 Regent street, Westminster, England. British patent No. 130,116.)

## OTHER MACHINERY PATENTS.

## THE UNITED STATES.

- N**O. 1,314,714. Device for curing and shaping tire patches. A. J. Stephens, Kansas City, Mo.  
 1,314,733. Apparatus for rolling tire treads. F. B. Converse and J. L. Butter, Akron, O., assignors to The B. F. Goodrich Co., New York City.  
 1,315,200. Plural-part mold for repairing rubber boots, etc. J. W. Arthur, assignor to The Williams Foundry & Machine Co.—both of Akron, O.

- 1,315,526. Tire strip reeling machines. De C. Neal, assignor to Morgan & Wright—both of Detroit, Mich.  
 1,315,731. Repair vulcanizer. A. B. Low, assignor to A. M. Darragh—both of Denver, Colo.  
 1,315,763. Apparatus for waterproofing felt. C. T. Dickey, Elizabeth, assignor to J. J. Voorhees, Jr., Jersey City—both in New Jersey  
 1,315,981. Tire-making machine. F. C. Morton, New Haven, Conn.  
 1,316,052. Machine for making hose. J. T. Lister, Cleveland, O.  
 1,316,105. Multiple vulcanizing press. E. Nall, Akron; E. A. Nall, Cuyahoga Falls, executrix of said E. Nall, deceased, assignor to The Goodyear Tire & Rubber Co., Akron—both in Ohio. (Renewed July 17, 1917. Serial No. 181,166.)  
 1,316,272. Tire core of sheet metal and process of manufacture. D. A. Clark and C. E. Lowe, assignors to The Clyde E. Lowe Co.—all of Cleveland, O.  
 1,316,273. Sheet-metal tire core. D. A. Clark and C. E. Lowe, assignors to The Clyde E. Lowe Co.—all of Cleveland, O.  
 1,316,274. Mandrel for tires. D. A. Clark and C. E. Lowe, assignors to The Clyde E. Lowe Co.—all of Cleveland, O.  
 1,316,275. Mandrel for inner tubes. D. A. Clark and C. E. Lowe, assignors to The Clyde E. Lowe Co.—all of Cleveland, O.  
 1,316,276. Mandrel for inner tubes. D. A. Clark and C. E. Lowe, assignors to The Clyde E. Lowe Co.—all of Cleveland, O.  
 1,316,356. Tire-building machine. F. B. Converse, Akron, O., assignor to The B. F. Goodrich Co., New York City.  
 1,316,805. Cementing device. M. A. Replogle, assignor to The Goodyear Tire & Rubber Co.—both of Akron, O.  
 1,317,124. Tire vulcanizer. D. E. Booth, Tulsa, Okla.  
 1,317,374. Device for maintaining tension in tire machines. C. Kuentzel, New York City, assignor to The Goodyear Tire & Rubber Co., Akron, O.  
 1,317,526. Stand for finishing tires. A. J. Savage and H. I. Morris, assignors to The Savage Tire Co.—all of San Diego, Calif.  
 1,317,657. Apparatus for manufacturing pneumatic tires. E. Hopkinson, New York City.  
 1,317,661. Two-part mold for tire vulcanizing. B. Darrow, assignor to The Goodyear Tire & Rubber Co.—both of Akron, O.  
 1,317,664. Apparatus and method for building up cord blankets for pneumatic tires. E. Nall, assignor to The Goodyear Tire & Rubber Co.—both of Akron, O.  
 1,317,668. Automatic valve controller for hydraulic press. W. E. Shively and K. B. Kilborn, assignors to The Goodyear Tire & Rubber Co.—all of Akron, O.  
 1,317,669. Vulcanizer for cord tires. E. G. Templeton, assignor to The Goodyear Tire & Rubber Co.—both of Akron, O.

## THE DOMINION OF CANADA.

- 192,984. Apparatus for testing tires. E. Ramisdell, Cleveland, O.  
 193,009. Device for repairing pneumatic-tire tubes. G. B. Wood, Detroit, Mich., U. S. A.

## THE UNITED KINGDOM.

- 129,222. Mixing machine. W. H. Read, 27 Caledonian Road, King's Cross, London. (Read Machinery Co., York, Pa., U. S. A.)  
 129,411. Apparatus for making tires, trans-acting during manufacture, etc. Dunlop Rubber Co., 14 Regent street, London, and C. Macbeth, Para Mills, Aston Cross, Birmingham.  
 129,813. Sewing machine for shipping tire fabrics. F. Lehmann, Trim-bach, near Olten, Canton Solothurn, Switzerland.

## NEW ZEALAND.

- 40,001. Two-part mold for tires. A. J. Ostberg and A. Kenny, Judd street, Richmond, near Melbourne, Vic.

## THE FRENCH REPUBLIC.

- 490,805. Apparatus for making rubber tires. E. Hopkinson, 1790 Broadway, New York City, U. S. A.

## AUSTRALIA.

## To Americans.

- 8,280. Machine for attaching heels consisting of sections of leather and rubber in which nails are first driven through the leather heel into the sole and afterward through the rubber section into the leather heel. The British United Shoe Machinery Co. of Australia, Proprietary, Limited, assignee of J. F. Standish, inventor, Massachusetts, U. S. A.

## PROCESS PATENTS.

## THE UNITED STATES.

- N**O. 1,314,931. Manufacture of casings for pneumatic tires, etc. E. K. Baker, assignor by mesne assignments to himself and C. G. Hawley—both of Chicago, Ill. (Original application divided.)  
 1,315,364. Manufacture of pneumatic tires. F. S. Dickinson, New York City.  
 1,315,710. Manufacture of pneumatic tires. A. A. Crozier, London, Eng.  
 1,316,104. Manufacture of cord tires. E. Nall, assignor to The Goodyear Tire & Rubber Co.—both of Akron, O.  
 1,317,442. Manufacture of hot-water bottles. R. Griffith, assignor to The Miller Rubber Co.—both of Akron, O.  
 1,317,665. Combined steam and acid cure for inner tubes. C. B. Orr, assignor to The Goodyear Tire & Rubber Co.—both of Akron, O.

## New Goods and Specialties.

### FOR THE PROTECTION OF LINEMEN.

**T**O MEET THE DEMAND from linemen for rubber articles to aid them in protecting themselves from electric wires, makers of rubber goods are constantly developing new ideas. Certain standard goods come to be required and others are much

in demand. A new item is shown in the accompanying illustration. It is made of three layers of rubber and two of canvas arranged alternately, with the canvas layers laid

crosswise with respect to each other. This trough is shaped to fit over live wires for insulation purposes. Two hard rubber rings, slotted, with an opening sufficiently large to admit the wire, serve to clamp the shield securely to it. Each shield is subjected to a submerged test of 30,000 volts of electricity before leaving the factory. The device can be applied in other ways as well as over wires. It may be used on the cross-piece or elsewhere, since it opens out easily when required. (Mathias-Hart Co., 516 Atlantic avenue, Boston, Massachusetts.)



KENYON LIFE-SAVING SUIT.

The suit is open at the top and is drawn up with a strap as indicated. This design has been patented. (C. Kenyon Co., 754 Pacific street, Brooklyn, New York.)

### CORD TIRE OF NOVEL DESIGN.

The growing popularity of cord tires has resulted in many new designs being put on the market. Some of these are decidedly novel, with the design cut into the tread so as to provide a non-skid feature. The one illustrated has a side-wall especially prepared to withstand abrasion, rut wear, and the steel cables in the beads are separately insulated. The breaker strip is of heavy impregnated fabric. (The Rubber Products Co., Barberton, Ohio.)



AUTO BABY CRIB.

GORDON MOTOR CRIB.



"STRONGHOLD" CORD TIRE.

A crib for the tiny tot is illustrated here, which is eminently convenient, safe, and practical, and may be attached to the robe

rail or rear of the front seat of an automobile. It is made of durable tan cloth fitted to a frame of black enameled steel, and is trimmed with a finish of fabric leather of the rubberized type. The crib is 32 by 14 inches in size and is steadied by a spring which attaches to the back seat or floor of the car. By means of

this spring, also, the crib can be adjusted for children of different weights up to two years of age. There is also a hood that is adjustable, to protect the child from sun, rain,

and wind. With a crib of this kind the mother can drive her own car if she so desires, while the baby is near enough to be within reach of her hand. By unsnapping the understrap and



"FITWELL" BABY PANTS.

loosening two thumb-screws, the crib may be folded against the back of the seat when unused, yet remain attached to the car ready for immediate adjustment. (Gordon Motor Crib Co., 27 West So. Water street, Chicago, Illinois.)

### TIGER SNAIL OF AUSTRALIA.

A manufacturer of toys has devised a representation of the tiger snail of Australia. It is made of metal with wind-up device by which it can be made to crawl on almost any smooth surface. This wind-up device is patented. The "feelers" or antennae of the snail are of rubber with painted tips. This adds one more member to the family of "crawling bugs." (Animate Toy Co., 31 East 17th street, New York.)



AUSTRALIAN TIGER SNAIL.

### "UTILITY FITWELL" BABY PANTS.

Another style of adjustable baby pants is pictured above. It has no buttons and requires no pinning or sewing, being adjusted by means of a buckled strap at the waist and drawstrings at the knees. This is made of waterproof fabric and also of rubber only. (Stern Specialty Co., 40 East 22d Street, New York.)

### NEW WATERPROOF CAPE.

Women's single-texture waterproof capes are now popular in England. They are made with very wide skirts, sometimes as much as 112 inches, with only one seam. The favorite shades are biscuit, dull stone, or light mole, which afford a good contrast for the braiding on the deep, square collar. There are slits for the hands, finished with laps, and the fastening is accomplished by means of buttons and button-holes widely spaced the entire length. These capes are worn 46 or 48 inches long and afford thoroughly practical protection from bad weather.

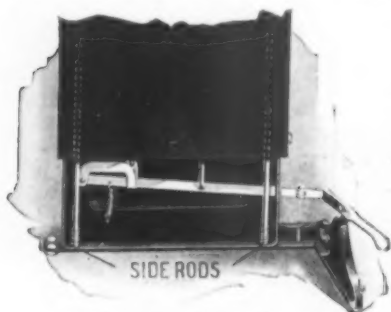


("The India-Rubber Journal.") ENGLISH RAIN CAPE.



## THE "LINE-A-TIME" HELPS THE COPYIST.

A new device for holding note-books, copy, etc., for the convenience of the typist, has been developed as illustrated below. From the side supporting arm held in place by a single screw inserted beside the typewriter in the table or desk, rise side rods



SIDE RODS

"LINE-A-TIME" COPY HOLDER.

the pages used. At the bottom, within easy reach of the right hand, is a screw for adjusting the line spacing to the requirements of the particular copy being used. The copy or note-book is then raised a line at a time as required, the line of copy being practically on a level with the eyes of the operator. The accessory has rubber feet and rubber to decrease noise and otherwise facilitate operation. (The Line-a-Time Manufacturing Co., Rochester, New York.)

## GORED STORM RUBBER.

Among the standard lines of overshoes for men and women, a most popular one is the "storm" pattern, with a high back, a comparatively low quarter, and a vamp coming up high over the instep, the whole following closely the lines of a "Romeo" slipper. A style of rubber which combines this shape with that of a sandal is, to all intents and purposes, a "storm" with the side space filled in with a thinner gore acting like the elastic web of a "Congress" shoe. The style shown here has the extension heel which, besides strengthening the most vulnerable point of a rubber overshoe, also serves as a "self-acting" heel when removing the rubber. (Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, Canada.)



GORED STORM RUBBER.



THE "AIR-CONTAINER."

by the "Air Container shown in cross-section above. This is built of cord and rubber and, it is claimed, will not deflate when punctured. (The Air Container Co., Inc., Boston, Massachusetts.)

## NEW HEEL WITH PNEUMATIC INSERTS.

By means of a newly invented electrical machine, leather heels are transformed into non-slip pneumatic ones by inserting pieces of rubber which project slightly below the surface and prevent the leather from coming into contact with hard pavements. Any ordinary leather heel may be so treated. It is the intention of the inventor to place these machines in shoe stores, so that heels may be equipped with these pneumatic inserts at the time of purchase, if the buyer so desires. (Pneumatic Shoe Heel Machinery Co., Inc., 1133 Broadway, New York City.)



PNEUMATIC HEEL.

## THE "COLONEL" GOLF BALL DIMPLED.

The popular "Colonel" golf ball, formerly made in meshed marking only, is now to be had in dimple marking, also, in various weights. The "Colonel 30" is the name of an entirely new weight in the dimpled marking. (The St. Mungo Manufacturing Co. of America, 121 Sylvan avenue, Newark, New Jersey.)

## A TIRE OF CLASSIC DESIGN.

Among the new tires appear some treads with adaptations of conventional classic designs. The "Trojan," shown here, is of this type. It is made in the 30 by 3½-inch size. (Sterling Tire Corp., Rutherford, New Jersey.)



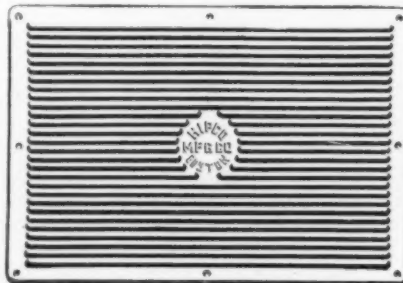
"TROJAN" TIRE.

## STEAMSHIP MAIL BY FLYING BOAT.

To demonstrate the possibility of delivering belated mail to vessels at sea, the "Popular Science Monthly," New York City, arranged recently for dropping a rubberized mail bag like that described in THE INDIA RUBBER WORLD, August 1, 1919, from a flying boat to the *Adriatic*, two hours out of New York, in the Ambrose channel. The mail pouch, in an outer container, was attached to a steel airplane cable 200 feet long, having rubber shock absorbers inserted near the juncture point. Two-pound bags of shot were attached to each of seven divisions at the other end. These wrapped themselves around the stay from the foremast to the fore mainmast, jerking the mail bag from its chute into the water, from which it was pulled to the bridge by its own cable.

## RUBBER MAT FOR RUNNING BOARDS.

A new mat for the running board of automobiles is made of a special rubber composition reinforced with impregnated fabric at the outside edges. This causes it to lie flat. Copper-plated washers are embedded in the rubber to support fastening bolts or screws. A patent is pending on this "Hipco" mat. (Hipco Manufacturing Co., 34 Columbus avenue, Boston, Massachusetts.)



"HIPCO" RUNNING BOARD MAT.

**GAS MASK FOR CHEMICAL FUMES.**

A new rubberized khaki gas mask has been patented which, it is claimed, will withstand rough handling and the heaviest chemical fumes. It also protects the wearer against dust, gases, and smoke as well as against fumes. The construction is different

**"DIAMOND" FUME MASK.**

from the ordinary muzzle respirator, ear-loops holding the device in place. It is claimed that it will not crack or fall apart in handling, washing, or contact with dust, fumes, or gases. (The Hygeia Respirator Co., Inc., 142 Fifth Avenue, New York City.)

**"MILADI-DAINTIE" APRON.**

A new apron for the maid or housewife takes the form of a dainty one with a bib, designed like the customary maid's apron, with a round apron part with a patch pocket for small articles.

The apron is made of rubberized fabric, in gray, and comes packed in an individual envelope under the trade-mark "Ritz" enclosed in a diamond. This apron can be cleaned with warm water and soap but should not be rubbed and should be dried by hanging in some place that is not hot.

**TOOL KIT FOR VULCANIZING.**

One of the mail-order companies includes in its catalog a tool kit consisting of eight especially designed tools for use in tire repairing. The set, packed in a leather case for rolling up, includes a roller, plug pliers, a probe, rubber roughener, cement brush, shear snips, a knife, and a stitcher.

(Charles William Stores, Brooklyn New York.)

**BRAENDER CORD TIRE.****A MOLDED CORD TIRE.**

A tire which has, it is claimed, the best features of the plain, ribbed, and non-skid tires, is represented in the accompanying illustration. The tread is said to produce a vacuum on wet pavements, making the use of chains unnecessary, and also giving strong traction on rough and hilly roads. (Braender Rubber & Tire Co., Rutherford, N. J.)

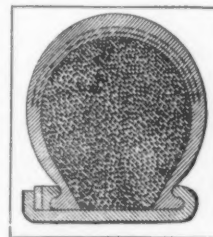
**CLASSIC.****A CLASSIC SANDAL.**

In the manufacture of rubber-soled, fabric-upper footwear, the producers are not simply approaching their rivals, the leather shoe manufacturers, they are already abreast of them in the race for business, and in some lines

they are outdistancing them in the beauty and variety of design and in the quality of workmanship of the finished product.

As an example of this equality a five-strap sandal is here shown. Designed on artistic lines, the shoe commends itself

for its beauty, while in finish and workmanship it is of the best. The upper is of white duck, the seams as well as the edges being bound with piping. The buttons are of white agate. The sole and heel, of white rubber, are joined to the upper with a neat, narrow foxing. The heel is low, being especially appropriate for growing girls, misses, and children, for which trade the sandal is intended. (The Columbus Rubber Co., of Montreal, Limited, Montreal, Quebec, Can.)

**"AERO" INNER TIRE.****A CUSHION INNER TIRE.**

An inner tire that contains numberless cells or pores filled with air, like a sponge, tends to eliminate the liability to punctures and blow-outs. The "Aero" cushion tire shown here in cross-section is so made from Para rubber, molded to fit the casing. This cushion inner tire takes the place of the usual pneumatic tube and can be used with any make of casing or rim. This type of inner tire is made for bicycles as well as for automobiles. (Aero-Cushion Inner Tire and Rubber Co., 909 Ford Building, Detroit, Mich.)

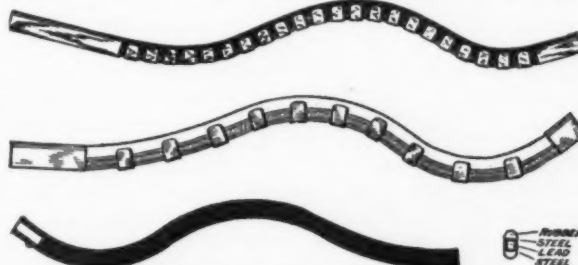
**CONVENIENT FOUNTAIN PENS.**

A convenient design in fountain pens has been produced that has a metal cap on the end of the pen and this cap, in turn, is fitted with a ring for attaching to a watch chain. When the pen cap is in place, secured by screw-threads, the pen can be placed in the pocket with the assurance that it cannot slip out without attracting the notice of the wearer.

This kind of pen may be obtained in a number of different designs in order to suit all tastes, some being ornamented with silver and gold mounting. In addition, one style included in the "Merchant" writing set comes in rolled gold, 14-karat gold, or sterling silver, with collapsible pencil to match, both having the ring in the end. Both the pen and pencil in this set are provided with tubes containing, respectively, ink tablets and extra leads. A different model is made with a self-filling lever. (The U. S. Victor Fountain Pen Co., Inc., successor to United States Fountain Pen Co., 115 Worth street, New York City.)

**"MERCHANT" WRITING SET.****"VICTOR" COLLAPSIBLE FOUNTAIN PEN.****ADJUSTABLE RUBBER CURVE-RULERS.**

Those who use drawing instruments will appreciate the convenience of these rubber curve-rulers. Two are of black and

**"DAVENPORT" ADJUSTABLE CURVE-RULERS.**

white rubber, respectively, sliding between steel ribbons, and the third has a square lead bar sliding similarly, the whole rubber-covered. (F. Winthrop Davenport, Providence, R. I.)

## United States Commerce in Crude Rubber for Calendar Year 1918.

**T**HE DECISION OF THE TREASURY DEPARTMENT TO MAKE OUT ITS annual returns according to the calendar year, from January to December inclusive, instead of the fiscal year, from June 30 to June 30, which had been the rule for many years, will make statistical comparisons and the inferences drawn from them liable to some degree of inaccuracy. In the returns for the calendar year 1918, the figures for the first six months ended June 30, have already been used for the returns of the fiscal year 1917-1918, so that in using the figures it must be remembered that for six months they are identical in both annual reports.

### CRUDE RUBBER IMPORTS.

For the calendar year 1918 the imports of crude rubber were 325,959,308 pounds, a falling off of over 60,000,000 pounds from 1917-1918, which was a record year for rubber importation. The value of the rubber was \$146,378,313, nearly \$60,000,000 less than in 1917-18. From the Far East, now the main source of rubber, the United States imported in 1918, 268,710,068 pounds, valued at \$125,005,308, as against 312,322,887, valued at \$169,086,900 in 1917-18. From the Straits Settlements came 198,904,100 pounds compared with 221,389,870 pounds, from British India 9,248,210 pounds, from the other British possessions 19,543,495 pounds, from Hong Kong 562,717 pounds, and from the Dutch East Indies 37,344,813 pounds as compared with the 53,663,857 pounds for 1917-18. From the French possessions came 15,680 pounds, from China 559,658 pounds, as against 11,763 pounds, and from Japan a like notable increase, 2,529,395 pounds as against 61,160 pounds in 1917-18. It is interesting to note that the Philippines sent 666,012 pounds in 1918 and only 80,644 in 1917-18.

The second source of rubber is South America. Brazil sent 40,332,620 pounds, value \$13,378,588, in 1918, and 41,277,914 pounds, value \$14,307,158, in 1917-18; Peru sent 1,373,751; Colombia, 884,792; Argentina, 390,734; Ecuador, 244,521; Venezuela, 158,857, and British and Dutch Guiana, 53,477 pounds, in each case a marked falling off. The imports from Bolivia were 474,781 pounds in 1918.

Third among the producers was Mexico, the imports being 2,185,809 pounds compared to 1,033,087 pounds for 1917-18. The imports from Panama were 164,445 pounds, from Nicaragua 158,140 pounds, from the other Central American states 64,489 pounds. From the West Indies came 51,680 pounds, as against 69,352 in the previous period. Cuba sent 4,390 pounds. The imports from Africa increased slightly in 1918; from British possessions came 76,264 pounds instead of 28,454 pounds, and from Portuguese possessions 22,622 pounds instead of 38,414.

The other countries produce no rubber but act as middlemen for their own possessions and others. From Great Britain, the United States imported 6,627,165 pounds in the calendar year 1918 and 21,926,943 pounds in the 1917-1918 period; from Portugal came 424,424 pounds in 1918; from France 160,318 pounds, and from Canada 2,712,336 pounds, compared with 4,247,287 pounds for 1917-18.

### IMPORTS BY CUSTOMS DISTRICT.

There was some shifting in the amounts received by the various customs districts: New York with 119,664,398 pounds, value \$49,381,919, in 1918, showed a marked falling off from the 171,643,218 pounds and the \$83,365,120 of 1917-18. Washington, which means Seattle and Tacoma, received 109,557,617 pounds, value \$51,099,147, a slightly higher price than the New York rubber; San Francisco received 53,063,123 pounds worth \$28,445,675, as against 80,907,215, a distinct decline in quantity; Buffalo fell to 693,490 pounds, Michigan to 336,194 pounds, Southern California to 78,345 pounds, New Orleans to 10,650 pounds.

On the other hand, Ohio rose to 19,157,829 pounds as compared

with 12,944,474; Massachusetts to 10,222,733 pounds, compared with 4,327,090 pounds; Dakota to 6,008,636, compared with 3,471,093; Vermont 4,095,971 pounds, compared with 3,471,093; San Antonio 808,372 pounds, compared with 33,193 pounds, and Chicago 1,297,791 pounds, compared with 809,095. Philadelphia's 31,480 pounds and St. Lawrence's 487,934 pounds are also increases. Omaha with 48,445 pounds and Pittsburgh with 96,732 pounds, are added to the list this year while Florida is left out. The figures show the distribution of the rubber according to the official ports of entry; they throw little light on the statistics of the ports where the crude rubber was actually landed.

### CRUDE RUBBER EXPORTS.

Crude rubber was exported from the United States in 1918 to the amount of 6,150,755 pounds, value \$3,133,622. Of this, 5,568,816 pounds went to Canada, 227,125 pounds to Australia, 229,790 pounds to Cuba, and 123,395 pounds to England. The amount reexported in 1917-18 was 8,208,280 pounds, and in the year before, 12,355,898 pounds.

### GUTTA PERCHA.

Gutta percha was imported into the United States during 1918 to the amount of 1,207,986 pounds, value \$225,922; of this, 354,794 pounds came from the British East Indies, 306,241 pounds from the Dutch East Indies, and 524,160 pounds from British Africa. The amount imported in 1917-18 was 1,151,312 pounds. This year 470,478 pounds came in at New York, 501,760 pounds at New Orleans, 228,696 at the Washington ports, and the remnant at San Francisco. To England, too, went 126,731 pounds of crude gutta percha.

### GUAYULE.

Guayule amounting to 1,376,085 pounds, worth \$413,484, came into the United States in 1918, 1,371,385 pounds from Mexico, the rest from Colombia. Almost all, 1,323,435 pounds, entered at San Antonio, Texas; 47,950 pounds at El Paso; 4,700 pounds at New York; 9,778 pounds of this was reexported to Canada. In 1917-18 the imports of guayule were 4,307,539 pounds.

### BALATA.

The imports of balata in 1918 were 1,547,338 pounds, value \$836,383, as compared with the 2,449,881 pounds and \$1,278,610 of 1917-1918 and the 3,287,445 pounds and \$1,649,452 of 1916-17, a steady decline. It all came to New York; 535,065 pounds from Panama, 316,520 pounds from Colombia, 260,491 pounds from Venezuela, 218,868 pounds from British Guiana, 120,078 pounds from Dutch Guiana, 32,814 pounds from the Dutch West Indies, 53,883 pounds from Trinidad and Tobago, 7,619 pounds from Brazil, and 2,000 pounds from Ecuador. Exports were: 652,902 pounds to Great Britain, 9,639 pounds to Canada, 43,644 pounds to Japan, and 5,000 pounds to Greece. In all, 706,185 pounds, worth \$436,252, were reexported.

### RUBBER SCRAP.

The imports of rubber scrap in 1918 were 8,526,420 pounds, value \$645,581. The United Kingdom contributed 4,741,202 pounds, Canada 1,390,235 pounds, Newfoundland and Labrador 64,205 pounds, New Zealand 83,345 pounds, Australia 10,000 pounds, France 780,347 pounds, Italy 242,376 pounds, Cuba 585,435 pounds, and Brazil 473,196 pounds.

### RECLAIMED RUBBER.

Reclaimed rubber amounting to 2,904,234 pounds, value \$502,176, was exported in turn. In 1917-18 the figures were 3,284,953 and \$567,278; this year's figures are the lowest for both amount and value, since 1904 at least.

### JELUTONG (PONTIANAK).

Free jelutong to the amount of 9,932,476 pounds, value \$678,916, was imported in 1918, of which 6,807,262 pounds came from the



British East Indies, including Borneo, and 3,099,282 pounds from the Dutch East Indies. For the preceding years the amount of free and dutiable jelutong in 1917-18 was 17,475,863 pounds, valued at \$975,716; for 1916-17 only dutiable jelutong is reported, 23,376,389 pounds, worth \$1,044,022. The districts which received it were New York, San Francisco, Washington and Vermont.

### THE EDITOR'S BOOK TABLE.

**OPPORTUNITIES FOR HANDICAPPED MEN IN THE RUBBER INDUSTRY.** By Bert J. Morris and Charles H. Paull, Bureau of Vocational Guidance, Division of Education, Harvard University. Prepared by the Bureau of Vocational Guidance in Cooperation with Red Cross Institute for Crippled and Disabled Men, 311 Fourth Avenue, New York. Edited by Douglas C. McMurtrie. (Paper covers, 125 pages, 6 by 9 inches, illustrated.)

**THIS VOLUME** effectually states in untechnical language the opportunities afforded handicapped men in the rubber industry. The basic features of the industry, the source of crude rubber, and the organization of a modern rubber factory are outlined. Reference is made to these provisions for training workers and teachers in shop schools.

The book chiefly consists of a systematic account, in the form of brief descriptions, of the operations used in the preparation of crude rubber for manufacturing purposes and those involved in the main manufacturing divisions of the industry, such as rubber footwear, rubber clothing, medical goods, mechanical goods and tires. The operations are treated in detail. After each description a brief statement is made concerning the time required to learn the work, the average wages paid at the present time, the opportunities for advancement, and the suitability of the work to various handicaps.

The book is instructive and will doubtless prove helpful in assisting many crippled war veterans to self-supporting positions in the rubber industry.

**THE CONDENSED CHEMICAL DICTIONARY.** COMPILED AND edited by the technical staff of the Chemical Engineering Catalog. First Edition, 1919; 525 pages, 6 by 9 inches. The Chemical Catalog Co., Inc., 1 Madison avenue, New York City.

This volume is designed for technical and non-technical inquirers who will find the book a short cut to concise information concerning the properties, derivation, grades, containers for, uses, fire hazard, and railroad shipping regulations of an extensive list of chemicals and other materials embraced in commerce and industry.

India rubber is cataloged under three heads, thus: P. 135. Caoutchouc, See Rubber. P. 267. India Rubber, See Caoutchouc. P. 406, Rubber, See Caoutchouc. Which is of course strictly accurate but not very informing.

Balata is stated incorrectly to be "rubber gum."

It is somewhat surprising that in the descriptions of the following named materials, their use in the rubber industry has been omitted; asbestos, barytes, caustic soda, fossil flour, glue, lime, lithopone, magnesium oxide, sulphur, sulphuric acid, talc, zinc oxide, besides other items described and used in the rubber industry in less important degree. In spite of these more serious omissions which will doubtless be corrected in subsequent editions the volume will prove valuable for reference in commercial and industrial circles.

**TRAINING IN THE RUBBER INDUSTRY. TRAINING BULLETIN** No. 20, United States Department of Labor. United States Training Service; C. T. Clayton Director. Government Printing Office, Washington, D. C., 1919. (75 pages; 6 by 9 inches.)

This bulletin devoted to training workers in the rubber industry has been prepared for the use of instructors in factory training and for factory managers desiring authoritative information on the subject. Much valuable information is contained in the first 17 pages concerning the various features of factory training such as the purposes in view, industrial relations, operation, methods, and supervision. Following some brief

remarks on wild and plantation rubber the manufacturing operations are taken up. The operations involved in making rubber boots and various styles of shoes are explained in sequence with many illustrations, including the assembly of parts. Similarly the items of automobile tire manufacture are discussed, followed by a list of important defects to be covered by inspection.

The pamphlet closes with a bibliography on rubber drawn from books, pamphlets and periodicals in the Library of Congress, Washington, D. C., and compiled by the Research Section of the United States Training Service, April 1, 1919.

**AN EXPORT ORDER AND ALLIED TOPICS. (SECOND EDITION.)** Foreign Trade Department, National Association of Manufacturers, New York City. (Paper cover, octavo, 48 pages.)

This booklet is intended to show, by a series of letters, documents and forms, the successive steps involved in handling an export order, and gives in reproduction every detail of the transaction from the first inquiry of the customer to the receipt of payment and close of the transaction. Another section gives facsimiles of various forms used in connection with export shipments, consular requirements of foreign countries, and other information of interest to houses doing an export business. There is added to this some account of the workings of the National Association of Manufacturers, and the benefits accruing to members of that association.

### NEW TRADE PUBLICATIONS.

**THE BUFFALO FOUNDRY & MACHINE CO., BUFFALO, NEW YORK,** has had the excellent idea of distributing to the rubber trade a colored peace map of Europe.

\* \* \*

**THE RAYBESTOS CO., BRIDGEPORT, CONNECTICUT,** HAS STARTED publication of a handsome house organ called "The Silver Edge," to acquaint dealers with the uses of its brake-lining and the method of application, and to bring about better cooperation between the manufacturers and their customers. The 16-page magazine is printed in two colors, is copiously illustrated with half-tones and well-drawn diagrams, introduces several of the company's salesmen, and includes other matter of special interest to automobilists and repair men. Another feature is a page in the form of a poster, which can be detached and hung up in the repair shop with advantage.

\* \* \*

"**THE MASON MAIL,**" PUBLISHED BY THE MASON TIRE & RUBBER Co., Kent, Ohio, after five months as a four-page bi-monthly will be expanded into a monthly publication of interest to outsiders as well as to those connected with the Mason organization. The same name will be retained and the first monthly issue will appear early in November. Charles V. Gilbert will continue to edit the publication.

\* \* \*

A PROOF THAT THE WAR IS REALLY OVER MAY BE FOUND IN THE sale by the Du Ponts of their war plants and equipment. The Du Pont Chemical Works of Wilmington, Delaware, issue a pamphlet containing lists of what they offer for sale. These include the grounds, buildings and fixtures of the big plants at Pompton Lakes, New Jersey, and at Hopewell, Virginia. The lists comprise many articles used in general manufacturing equipment from engines and elevators to bolts and nuts; also office, hospital and restaurant equipment.

\* \* \*

**THE GILLETTE RUBBER CO., EAU CLAIRE, WISCONSIN,** HAS recently published two booklets, which have been distributed to all of the company. One is "The Square Deal," an introduction of the company to the employee. It tells what the company has done, is doing for the workers and what it may help them to do. It is a frank talk on the elements which will result in progress

and promotion, urging cooperation, and inculcating sound principles.

The other booklet outlines the principles and regulations of the Industrial Federation of the Gillette Rubber Co., which is described as "a democratic organization for the promotion of personal efficiency, a square deal to every member and establishment of just and fair dealing in all our relations with each other." Undoubtedly a study of these booklets must result in closer relations between the company and its employees.

\* \* \*

**THE MERCHANTS ASSOCIATION OF NEW YORK, YEAR BOOK, 1919:** While much of the activity of the Association was devoted to war work, as S. C. Mead, the secretary, shows in his portion of this twenty-first annual report, the many branches of public welfare over which the various bureaus keep watch were by no means neglected. The readjustments needed by the return of peace have kept the many committees busy. The membership at the end of April was 5,881, the number of new members elected during the year being 824, the largest for any year since the Association was formed. The convenient lists of members according to their lines of business shows that 38 firms are engaged in the rubber trade. The year book is illustrated by photographs including an excellent likeness of W. Fellowes Morgan, president.

\* \* \*

**DR. O. DE VRIES OF THE EXPERIMENT STATION AT BUITENZORG, Java,** has published an authoritative book on the preparation and the properties of plantation rubber (*"Bereiding en Eigenschappen van Plantage-Rubber," Vereeniging Centraal Rubberstation, Buitenzorg.*) It is highly praised in an appreciative review by Professor P. van Romburgh in *"De Indische Mercur."*

#### THE OBITUARY RECORD.

##### FOUNDED AN IMPORTANT INDUSTRY.

**MAJOR WILLIAM WRIGHT HARRAL**, who, with his brother, E. W. Harral, founded the Fairfield Rubber Co., at Fairfield, Connecticut, died recently at the home of his son in Mount Vernon, New York, aged 83 years. For some years he travelled in the West, selling rubber clothing and carriage cloth made by the company, and early in 1890 he took charge of the New York office and sales department on West Broadway and Franklin street, removing a year later to a larger building on Worth street. Ten years ago he retired from business, after over a quarter century of service for the industry he founded, and made his home with his son, George Harral.

Major Harral served honorably in the Civil War, taking part in the battle of Fort Sumter and several other important engagements, and later declined the offer of a very flattering position in the United States army.

##### FORMERLY A RUBBER MANUFACTURER.

Edward J. Slattery, who died in Boston last month at the age of 69, was at one time foreman of the cutting room of the Para Rubber Shoe Co., at South Framingham, Massachusetts, but being appointed postmaster of that town by President Cleveland he retired from the trade, and later devoted much of his time to public service.

He was for two terms a member of the State Senate and in 1898 was the Democratic candidate for Lieutenant-Governor of Massachusetts, and in more recent years served as secretary to James J. Curley, formerly mayor of Boston, during his term of office. He is survived by his widow and four sons.

##### A VETERAN RUBBER COMPANY BOOKKEEPER.

George W. Cummings, for many years connected with the Boston Rubber Shoe Co., died at the residence of his daughter in Brookline, Massachusetts, September 20, aged 77 years.

Mr. Cummings was of an old Boston family, the son of Daniel

Cummings. He attended the public schools and on his graduation from the English High School, entered the employ of his brother, in the wholesale flour business, later becoming partner in the firm of Charles H. Cummings & Co.

He afterwards became associated with the selling company which was formed to distribute the lines of several rubber footwear factories, and when that concern was discontinued he took charge of the bookkeeping department of the Boston Rubber Shoe Co., which department he conducted until that company was purchased by the United States Rubber Co. After a total service of nearly 30 years with these companies, he retired with a pension.

Leisure, however, became irksome after a time, and for the last few years he had been connected with a furniture concern in Boston. For some time his health had been impaired, and an operation for cancer was but a temporary relief. He is survived by his widow, a daughter, and a son, Thomas C. Cummings, who is salesman in New England for the mechanical goods department of the United States Rubber Co.

##### A PIONEER IN RUBBER AND OILSKIN TRADE.

Edward Macbean of the firm of Edward Macbean & Co., Glasgow, a pioneer in the rubber and oilskin trade of Scotland, died recently. He founded the business in 1876 and soon began to specialize in water-proof goods and oilskins. The first factory was at Port Dundas. Some years later, mills were erected at Johnstone, near Paisley.

The Macbean oilskins are known throughout the world, particularly the heavy oilskin coats worn by seamen.

The Breece expedition to the North Pole was fitted out with special clothing and rubber materials made by the Macbean firm. The Brattice cloth used in coal mines were an improvement of Mr. Macbean.

Mr. Macbean was in the United States in 1910 and at that time was annoyed by a newspaper account of his condemning German artificial rubber, which he discovered through THE INDIA RUBBER WORLD.

##### DEATH OF A SUCCESSFUL JAPANESE BUSINESS MAN.

The death is announced of Genrijo Yonei, president of the Meiji Rubber Manufacturing Co., one of the most respected business men of Tokio, at the age of 58 years. Besides controlling the Goshi Kwaiska Yonei Shoten, Mr. Yonei was managing director of the Kirin Brewery Company, and a director of the Japan Sheet Glass Company, which were developed chiefly by his exertions.

##### TREASURY DECISIONS.

###### FOUNTAIN PENS TAXED AS JEWELRY.

Internal Revenue officials have decided that "a fountain pen ornamented, mounted, or fitted with precious metals or imitations thereof, or ivory, or pearls, precious and semi-precious stones or imitations," or even a fountain pen consisting of a plain rubber holder containing a gold pen point, is subject to the jewelry tax on the total price for which such pens are sold. The Revenue Act of 1918, section 905, imposes a tax of 6 per cent on the selling price of jewelry, whether real or imitation, including pencils and pens. The penalty to dealers who fail to collect and account for the tax is a fine of \$1,000. (Treasury Decision No. 2893.)

##### CUSTOMS APPRAISER'S DECISIONS.

No. 38153.—Protest 817082 of American Chiclé Company, (Detroit).

**CHICLÉ**—Chiclé sent from Mexico to Canada and there reduced to small pieces for convenience in transportation. Appraiser held it to be refined chiclé and assessed duty at 20 cents per pound, according to paragraph 36 of Act of 1913. Claimed that

it was crude chicle, assessable at 15 cents by same paragraph. Opinion by McClelland, G. A. Chicle was not refined by any process. Protest sustained. (Treasury Decisions, Volume 37, No. 15.)

### RUBBER TRADE INQUIRIES.

*THE inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The editor is therefore glad to have those interested communicate with him.*

(752.) An export company desires the addresses of manufacturers of tires in millimeter sizes.

(753.) A reader asks for the address of manufacturers of wood calender shells.

(754.) An inquiry has been received for the address of a concern manufacturing rivetting machines for use in making outside boots for rubber tires.

(755.) A subscriber requests addresses of manufacturers of security or lug bolts for one-piece clincher rims on European cars.

(756.) A manufacturer asks where he can obtain the accelerator anhydrousformaniline.

(757.) An inquiry has been received as to buyers of uncured friction scrap.

(758.) A reader asks for the addresses of manufacturers of improved machines for making square-rolled packing, imitating the hand process of folding rubbered cloth so as to make a packing square throughout.

### TRADE OPPORTUNITIES FROM CONSULAR REPORTS.

*Addresses may be obtained from the Bureau of Foreign and Domestic Commerce, Washington D. C., or from the following district or cooperative offices. Request for each address should be on a separate sheet, and state number.*

#### DISTRICT OFFICES.

New York: 734 Customhouse  
Boston: 1801 Customhouse.  
Chicago: 504 Federal Building  
St. Louis: 402 Third National Bank Building  
New Orleans: 1020 Hibernia Bank Building.  
San Francisco: 307 Customhouse.  
Seattle: 848 Henry Building.

#### COOPERATIVE OFFICES.

Cleveland: Chamber of Commerce.  
Cincinnati: Chamber of Commerce;  
General Freight Agent, Southern Railway, 96 Ingalls Building.  
Los Angeles: Chamber of Commerce.  
Philadelphia: Chamber of Commerce.  
Portland, Oreg.: Chamber of Commerce.  
Dayton, Ohio: Dayton Chamber of Commerce.

(30,667.) A man in Czecho-Slovakia requires tires for which he also desires to secure the agency. Send prices and catalogs. Payment in United States currency. Correspondence may be in English.

(30,737.) An American exporting company desires to purchase and secure agencies for the sale of rubber shoes and heels.

(30,756.) A commercial agent in Czecho-Slovakia desires to purchase and secure an agency for the sale of rubber goods, etc. Correspondence in Polish or French.

(30,766.) An agency is desired by a man in Belgium for the sale of hard rubber combs and novelties. Quotations should be given c.i.f. Antwerp. Terms cash, or 90 days preferred. Correspondence and catalogs should be in French.

(30,791.) A retail merchant in France desires to secure agencies for the sale of rubber, and rubber heels. Quotations should be given c.i.f. Havre or Bordeaux. Terms, cash against documents.

(30,817.) The representative of an American firm who is about to sail for Europe desires to secure agencies from manufacturers for the sale of automobile tires and rubber goods.

(30,818.) A firm in Spain desires to purchase on its own account and secure an agency for the sale of balata and mechanical

rubber goods. Quote c.i.f. Spanish ports. Payment against documents, or 90 days' draft. Correspondence may be in English.

(30,821.) An agency is desired by a man in England for the sale of rubber goods of medium to good quality. Quote c.i.f. English ports.

(30,827.) A corporation in Canada desires to place orders for a large quantity of rubber footwear. Bank references.

(30,853.) A business man in Norway desires to secure an agency for the sale of rubber, rubber goods, etc. Quote c.i.f. Norwegian port. Payment through banks.

(30,896.) A merchant in Poland desires to secure agencies from American exporters and manufacturers for the sale of rubber dental appliances and supplies. Correspondence may be in English.

(30,915.) An American firm desires to purchase rubber boots and shoes from manufacturers for export to its clients in the Orient. Cash against documents.

(30,944.) A list of inquiries for American representation of rubber goods has been received from the American Consul at Valencia, Spain. Firms interested in this trade may secure copies of these lists upon application to the Bureau or its district offices.

(30,992.) A firm in Norway desires to secure an agency for the sale of automobile tires. Quote c.i.f. Norwegian ports. Terms, preferably 90 days.

(31,045.) A firm in Norway wishes to secure an agency for the sale of and to purchase rubber goods. Quote c.i.f. Norwegian port. Payment through banks. Reference.

(31,057.) An American firm is sending an agent to Czecho-Slovakia to establish permanent agencies for rubber goods. Reference.

(31,073.) Catalogs of tractors are desired by rubber companies in the Dutch East Indies. It is planned to cultivate between the rubber trees.

(31,079.) An importer from Italy, who is in the United States for a short time, wishes to secure an agency for the sale of belting and rubber in Italy and Austria. References.

(31,102.) A firm in Sweden wishes to secure an agency for rubber and silk raincoats for Scandinavia. References.

### BILLBOARDS THAT BENEFIT BOTH PRODUCER AND CONSUMER.

At a time of increasing agitation against the promiscuous erection of ugly billboard advertisements to mar the natural beauty of the landscape, the "History of the United States," as found



AN ATTRACTIVE AND INFORMING BILLBOARD.

in the form of billboards along the principal state roads throughout the country, stands forth as a notable exception.

These clever signboards not only advertise United States tires, but serve a useful purpose. They are attractive to the eye, helpful to the motorist and educational. They tell the distance to the next town and present interesting historic facts regarding it that



might otherwise remain unknown to the traveler. Their advertising aspect is subordinate to their convenience to the public, though none the less effective.

#### NEW INCORPORATIONS.

Assembled Tire Corp., October 17 (New Jersey), \$100,000. T. P. Edwards, H. S. Baker, both of Roselle; D. L. Page, Hamplewood—all in New Jersey. Principal office, 266 Halsey street, Newark, New Jersey. Agent in charge, T. P. Edwards. To manufacture, repair, purchase, sell and deal in automobile tires and tubes.

Avon Tire & Rubber Co., October 6 (Delaware), \$1,000,000. Mr. Bosom; B. Loewenstein; J. W. Cowell—all of Cincinnati, Ohio. Delaware agent, Capital Trust Co. of Delaware, Dover, Delaware. To manufacture and deal in automobile tires and inner tubes.

B. & G. Rubber Co., The, September 2 (Ohio), \$25,000. G. H. Gualt, president and treasurer; D. H. Gualt, vice-president; H. V. Barrett, secretary and general manager. Principal office, Nankin, Ohio. To manufacture dipped goods and toy novelties.

Blaylock Tire & Rubber Co., G. E., September 25 (Maryland), \$750,000. G. E. and A. G. Blaylock, both of 1811 North Charles street; C. E. Erdman, Hartford road & Erdman avenue—all of Baltimore, Maryland. Principal office, 1811 North Charles street, Baltimore, Maryland. To buy, sell, manufacture, vulcanize, repair and deal in rubber tires, etc.

Burke Tire Service, Inc., October 3 (New Jersey), \$25,000. J. B. Burke; W. D. Danberry; M. A. Harkins—all of New Brunswick, New Jersey. Principal office, 7 Albany street, New Brunswick, New Jersey. Agent in charge, J. B. Burke. To manufacture, import, buy, and sell automobile accessories.

Cadillac Tire & Rubber Co., Inc., October 3 (New York), \$500,000. J. L. Ranzenhofer, 244 Seventh street; H. Sanier & C. H. Blessing, both of 1834 Broadway—all of New York City. To manufacture tires.

Collins Tire & Rubber Co., Inc., October 9 (New York), \$8,000. J. Jacobs; S. Bernheim; W. Loewenthal—all of 1877 Broadway, New York City. To manufacture tires.

Continental Tire & Rubber Co., Inc., October 9 (New York), \$5,000. J. Jacobs; S. Bernheim; W. Loewenthal—all of 1877 Broadway, New York City. To manufacture tires.

Continental Auto Tire Co., Inc., October 4 (New York), \$5,000. E. B. Grubel, 1 P. Newman, both of 1447 Bryant avenue; E. Meyers, 80 Maiden Lane—all of New York City. To manufacture tires.

Corning Rubber Co., Inc., October 3 (New York), \$50,000. W. H. Stetson, 172 West 105th street; F. C. Mullener, 2550 Bainbridge avenue, both of New York City; S. M. Buery, Flatbush, Brooklyn, New York. Principal office, Brooklyn, New York. To manufacture dental rubber.

Evans Tire & Rubber Co., August 11 (Indiana), \$100,000. R. I. Evans; L. E. Ridgway; R. O. Becoff—all of Fort Wayne, Indiana. Principal office, Fort Wayne, Indiana. To manufacture new automobile tires and tubes and to repair and rebuild old tires and tubes.

Greene Tire Sales Co., September 8 (Delaware), \$25,000. T. L. Croteau; H. E. Knox; S. E. Dill—all of Wilmington, Delaware. Delaware agent, Corporation Trust Co. of America, Du Pont Building, Wilmington, Delaware. To manufacture and deal in rubber tires, tubes and accessories for automobiles.

Hott-Dunham Rubber Co., The, May 12 (Ohio), \$10,000. B. E. Lindsey, 106 Lexington avenue, president (not active); R. A. Dunham, 390 East Town street, vice-president; F. B. Hott, 85 Tulane Road, secretary, treasurer and general manager—all of Columbus, Ohio. Principal office, 120 East Long street, Columbus, Ohio. To repair and tread tires.

Jersey Cord Tire Corp., September 30 (New Jersey), \$1,000,000. J. G. Hultin, Elizabeth; C. C. Eckrode, Newark; W. D. Reynolds, Cranford—all in New Jersey. Principal office, 118 Adams street, Newark, New Jersey. Agent in charge, C. C. Eckrode. To manufacture tires, tubes, and mechanical rubber goods.

K. B. Auto Supply Co., September 11 (New Jersey), \$100,000. A. E. and J. Klinkowstein—all of 117 East Hanover street, Trenton, New Jersey. Principal office, 117 East Hanover street, Trenton, New Jersey. Agent in charge, E. Klinkowstein. To buy, sell, and deal in automobile tires, tubes, and accessories.

Kolman Tire & Rubber Co., Inc., October 1 (New York), \$25,000. J. Jacobs; S. Bernheim; C. A. Weldon—all of 1877 Broadway, New York City. To manufacture tires, etc.

Manufacturer's Tire & Rubber Co., Inc., September 22 (New York), \$10,000. Jacob and Joseph M. Mazer, both of 8745 21st avenue; A. W. Tobey, 32 Glenmore avenue—all of Brooklyn, New York. Principal office, Brooklyn, New York. To manufacture tires.

McAdoo-Akron Co., The, July 12 (Ohio), \$10,000. J. S. Pattie, 311 Ohio Building, president; G. H. Van Hynning, Corner East Market and Union streets, vice-president; C. K. Hoover, 769 Johnston street, secretary; H. C. Wissman, 317 Second National Building, general manager; T. O. McAdoo, 184 Annadale avenue, director—all of Akron, Ohio. Principal office, 317 Second National Building, Akron, Ohio. To manufacture cotton gloves, rubberizing cotton gloves, waterproofing gloves, and to deal in rubber.

Owensboro Tire & Rubber Co., Inc., October 9 (New York), \$6,000. J. Jacobs; S. Bernheim; W. Loewenthal—all of 1877 Broadway, New York City. To manufacture tires.

Penn-ray Puncture Proof Interliner Co., October 13 (Delaware), \$100,000. F. R. Hansell; J. Vernon Pimm, both of Philadelphia, Pennsylvania; E. M. MacFarland, Camden, New Jersey. Delaware agent, Corporation Guarantee & Trust Co., Ford Building, Wilmington, Delaware. To manufacture and deal in tires and tubes.

Planet Rubber Co., May 15 (California), \$250,000. W. A. Jackson, 1015 South Main street, president; B. L. Vickrey, 308 South Hill street, vice-president; J. S. Wise, 936 South Albany street, secretary; J. C. Evans, 1017 West 53rd street, director; H. Levine, 623 North Vine street, director—all of Los Angeles, California. Principal office, 125 East Ninth street, Los Angeles, California. To manufacture "Planet" sub-tires, tires, tire accessories, and vulcanizers' supplies.

Poston Tire & Rubber Co., Inc., October 9 (New York), \$5,000. J. Jacobs; S. Bernheim; W. Loewenthal—all of 1877 Broadway, New York City. To manufacture tires.

Pow-Den Tire Corp., The, October 3 (New York), \$25,000. M. J. and I. Powsner, both of 44 Linden Park; F. B. Denison, 505 Forest avenue—all of Buffalo, New York. Principal office, Buffalo, New York. To manufacture tires.

Puritan Rubber Co., Inc., September 11 (Washington), \$500,000. G. Lloyd, president; F. C. Plouf, vice-president, treasurer and purchasing agent; O. P. McElmeel, secretary. Principal office, 401-402 Railway Exchange Building, Seattle, Washington. To manufacture "Pathfinder" casings, tubes and accessories.

Rennibut Rubber Co., Inc., October 6 (New York), \$10,000. P. E. Wish; C. H. Tisserand; W. R. Waite—all of 13 Park Row, New York City. To manufacture rubber goods.

Resilient Auto Tire Co., September 11 (Wisconsin), \$100,000. C. Uhrinecz; J. Hornyak; E. A. Makal. Principal office, Milwaukee, Wisconsin. To manufacture auto tires and supplies.

Rubbermetal Co., Inc., September 25 (Maryland), \$100,000. G. H. Pembroke, 663 West Fayette street; M. and E. Treteck, both of 9 South Exeter street—all of Baltimore, Maryland. Principal office, 210 East Lexington street, Baltimore, Maryland. To manufacture, buy, sell, deal in automobile tires, tubes, etc.

Sabine Tire & Rubber Co., Inc., October 6 (New York), \$5,000. J. Jacobs; S. Bernheim; W. Loewenthal—all of 1877 Broadway, New York City. To manufacture tires.

Specialty Rubber Works, Inc., September 4 (New Jersey), \$10,000. H. Morris, 1500 Boston Road; L. Bunzl, 121 East 72nd street; R. L. Lyon, 2767 Marion avenue—all of New York City. Principal office, Hedenberg Works, Plane street, Newark, New Jersey. To manufacture and deal in rubber goods.

Tire Accessories Mfg. Co., Inc., September 29 (New York), \$14,000. E. D. Loewenthal, 135 West 36th street; H. H. Plotkin, 99 Forsyth street—both in New York City; I. J. Rifkin, 37th street and Mermaid avenue, Coney Island—both in New York. Principal office, Long Island City, New York. To manufacture tires.

United States Victor Fountain Pen Co., Inc., The, June 4 (New York), \$30,000. E. Hugetz, president. Principal office, 115 Worth street, New York City. To manufacture fountain pens.

Victory Rubber Manufacturing Co., The, July 14 (Georgia), \$500,000. A. P. Phillips, G. J. Reuter, and E. W. Van Dusen—all of Atlanta, Fulton County, Georgia. Principal office, Atlanta, Fulton County, Georgia. To manufacture mechanical rubber goods and other rubber products.

Walter Jeanne, Inc., September 26 (New York), \$5,000. Dr. J. W. and P. A. Appleton, and M. Goode—all of 353 Fifth avenue, New York City. To manufacture rubber goods and apparel.

Wayne Tire & Rubber Co., May 16 (Ohio), \$600,000. H. T. Auerbach, Buffalo, New York, president; E. C. Love, secretary and treasurer; H. R. Platt, general manager, both of Orrville, Ohio. Principal office, Orrville, Ohio. To manufacture automobile tires and tubes.

Western Kentucky Tire Co., The, June 4 (Kentucky), \$50,000. O. Goodwin, president; L. Goodwin, vice-president; A. K. Goodwin, secretary and treasurer—all of Hopkinsville, Kentucky. Principal office, Hopkinsville, Kentucky. To distribute Diamond tires and accessories and to manufacture Sure-Grip and Devil-Grip patching kits.

Winston-Salem Tire & Rubber Co., Inc., October 9 (New York), \$5,000. J. Jacobs; S. Bernheim; W. Loewenthal—all of 1877 Broadway, New York City. To manufacture tires.

Wyoming Sales Co., October 13 (Delaware), \$500,000. F. R. Hansell; J. Vernon Pimm, both of Philadelphia, Pennsylvania; E. M. MacFarland, Camden, New Jersey. Delaware agent, Corporation Guarantee & Trust Co., Ford Building, Wilmington, Delaware. To manufacture and deal in all kinds of rubber goods.

Wyoming Tire & Rubber Co., October 13 (Delaware), \$500,000. F. R. Hansell; J. V. Pimm, both of Philadelphia, Pennsylvania; R. M. MacFarland, Camden, New Jersey. Delaware agent, Corporation Guarantee & Trust Co., Ford Building, Wilmington, Delaware. To manufacture and deal in all kinds of rubber goods.

Zonta Tire & Rubber Co., August 22 (Iowa), \$1,500,000. T. P. Scott, president; H. A. Ritchie, vice-president; F. J. Simmons, treasurer; H. W. Caldwell, secretary. Principal office, Sioux City, Iowa. To manufacture tires and tubes.

#### STATEMENT OF THE INDIA RUBBER WORLD.

Statement of the ownership, management, etc., required by the Act of Congress of August 24, 1912, of THE INDIA RUBBER WORLD, published monthly at New York, New York, for October 1, 1919.

State of New York, } ss:  
County of New York, }

Before me, a notary public in and for the State and county aforesaid, personally appeared E. M. Hoag, who, having been duly sworn according to law, deposes and says that she is the business manager of THE INDIA RUBBER WORLD, and that the following is, to the best of her knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit:

That the names and addresses of the publisher, editor, managing editor, and business manager are:

Publisher, The India Rubber Publishing Co., 25 West Forty-fifth street, New York City.

Editor, Henry C. Pearson, 83 Agawam Road, Waban, Massachusetts.

Managing Editor, Henry C. Pearson, 83 Agawam Road, Waban, Massachusetts.

Business Manager, E. M. Hoag, 25 West Forty-fifth street, New York City.

2. That the owners are: (Give names and addresses of individual owners, or, if a corporation, give its name and the names and addresses of stockholders owning or holding 1 per cent or more of the total amount of stock.)

Henry C. Pearson, 83 Agawam Road, Waban, Massachusetts.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person, or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by her.

E. M. HOAG, Business Manager.

Sworn to and subscribed before me this 30th day of September, 1919.

[SEAL]

FRED E. SPRENGER,

Notary Public, Westchester County.

Certificate filed in New York County.

My commission expires March 30, 1920. New York County Clerk.

No. 186. Register No. 10188.







## News of the American Rubber Industry.

### FINANCIAL NOTES.

THE ENTIRE amount of the offering of \$36,000,000 of the United State's Rubber Co.'s common stock was subscribed for without calling upon the underwriters to take any part. Subscribers for only \$2,316,550 par value availed themselves of the opportunity to pay in four instalments, the other stockholders preferred to pay \$33,683,450 par value in full on October 1.

The statement of the United States Rubber Co. and its subsidiaries for the six months ended June 30, 1919, shows surplus after charges and federal taxes of \$10,815,750, equivalent after preferred dividends to \$23.01 a share on \$36,000,000 common stock. This compares with \$10,283,025, or \$21.64 a share in the corresponding period of 1918:

	1919.	1918.
Total sales .....	\$99,489,372	\$108,515,725
General expenses and ordinary taxes .....	77,144,870	82,439,561
Operating profits .....	22,344,502	26,076,164
Interest charges, etc. ....	4,852,606	11,991,289
Federal and Canadian taxes .....	6,676,146	3,801,850
Net profits .....	10,815,750	10,283,035
First preferred dividends .....	2,508,484	2,468,888
Second preferred dividends .....	12,108	12,108
Subsidiary companies dividends .....	9,308	9,320
Surplus .....	8,285,850	7,792,709
Previous surplus .....	41,848,051	31,891,207
Total surplus .....	50,133,901	39,683,916
Items applying to prior period .....		40,660
Profit and loss surplus .....	50,133,901	39,643,256

The Boston Woven Hose & Rubber Co.'s balance sheet as of September 1, 1919, shows a surplus of \$2,035,183, an increase of \$352,986 over last year. After the signing of the armistice the Government cancelled many orders. This left a large inventory on the company's hands, which has now been reduced \$362,851 to \$2,675,225. It has increased its working capital during the year by \$514,099, the total now being \$3,439,598, and is free from debt. During the year the company began to manufacture automobile tops. This business has proved very profitable and will be largely increased in volume.

The company's balance sheet, compared with that for 1918, is as follows:

ASSETS.			
September 1.			
	1919.	1918.	
Patents .....	\$1	\$1	
Office furniture .....	1	1	
Land and buildings .....	1,502,130	1,558,982	
Machinery and tools .....	943,493	987,414	
Cash .....	581,118	420,770	
Accounts receivable .....	1,228,073	1,351,472	
Liberty bonds .....	410,376	250,649	
Inventory .....	2,675,255	3,038,106	
Total .....	\$7,450,409	\$7,607,395	
LIABILITIES.			
Preferred stock .....	\$750,000	\$750,000	
Common stock .....	3,100,000	3,039,700	
Bills payable .....	790,000	1,552,000	
Liberty bonds (loans) .....	325,000		
Accounts payable .....	253,257	309,044	
Taxes .....	65,101	255,082	
Accrued wages .....	21,866	19,372	
Surplus .....	2,035,183	1,682,197	
Total .....	\$7,340,409	\$7,607,395	

The Goodyear Tire & Rubber Co., Akron, Ohio, recently announced that the \$15,000,000 worth of second preferred eight per cent stock which was issued during the war was to be called in at 105 on November 1. It offered to each employe the opportunity to subscribe for any number of shares up to twenty of its preferred non-assessable seven per cent cumulative stock, for which payment will be accepted at the rate of \$4 monthly per share, to be deducted from salaries, payments to be completed within two years, subject to an interest charge on deferred payments. Quarterly dividends of one and three-quarters per cent will be paid on the full par value of stock subscribed for. Special

inducement will be offered to subscribers to hold stock. Subscriptions started October 29 and closed November 1, the total number of subscribers in the factory and office being 16,016 and their subscriptions amounting to \$6,746,800. This did not include the plants in Canada, Arizona, or California.

It has become known that the Mason Tire & Rubber Co., Kent, Ohio, has a plan under way for increasing its capital stock to \$7,500,000. No definite announcement has been made, but it is understood that sales for the time being are to be restricted to present stockholders.

The Firestone Tire & Rubber Co., Akron, Ohio, is issuing \$10,000,000 of seven per cent preferred stock for the purpose of enlarging its plant. The immediate purpose of the issue is to provide the company with additional working capital, to construct a new mechanical building and a new steel rim plant, and to furnish additional equipment for plant No. 2 to increase its output, which consists of 3½-inch tires and tubes exclusively. The present output is 22,000 tires and 25,000 tubes a day; the additional equipment will raise this to 36,000 tires and 40,000 tubes daily. In the last complete eight years the amount of net sales and net earnings after preferred stock dividends had been paid were as follows:

	Net Sales.	Net Earnings.
1918 .....	\$75,801,507	\$4,664,615
1917 .....	61,587,219	4,619,298
*1916 .....	44,135,326	5,837,021
1915 .....	25,319,476	4,447,271
1914 .....	19,250,110	3,157,719
1913 .....	15,720,907	1,558,059
1912 .....	11,683,200	1,126,911
1911 .....	7,462,581	566,752

\* Fifteen months—end of fiscal year changed from July 31 to October 31.

For the nine months, November 1, 1918, to July 31, 1919, the net sales amounted to \$59,145,396, and for the month of August the net sales were over \$10,000,000, the largest amount in the company's history, exceeding greatly the total year's sales of nine year's ago.

The Goodyear Tire & Rubber Company of California has issued \$2,000,000 more of seven per cent preferred stock in addition to the \$6,000,000 put on the market in July, making eight million out of the ten million authorized.

The company has acquired 440 acres of ground at Los Angeles adjacent to the 600 acres, forming Ascot Park, that were first acquired. On this will be built also the plant of another subsidiary of the Akron parent company, the Pacific Cotton Mills Co., that will manufacture the cotton fabrics which enter into the construction of tires and other rubber products from the cotton grown in Arizona and Southern California. The Pacific Cotton Mills Co. has just issued \$2,000,000 of seven per cent preferred stock, out of \$3,000,000 authorized. The plant is expected to run 33,000 spindles.

Shares of The Fisk Rubber Co. are active, as the statement for the first eight months of 1919 is expected to be very favorable. Sales are amounting to more than \$5,000,000 a month so that last year's total of \$36,000,000 will be far surpassed. When the additions to its manufacturing equipment at Chicopee Falls are completed the company will be able to turn out 15,000 tires a day. For the last five years, surplus profits have been turned back into the business, but the directors now believe that a dividend on the common stock can be paid. This will be done probably before the new year.

The balance December 31, 1918, of \$4,425,923 had become \$8,009,143 by September, 30, 1919, and the profits from January 1 through September 30, 1919, were \$4,199,399.

The Hodgman Rubber Co., whose factories are at Tuckahoe, New York, is issuing \$1,000,000 of 8 per cent convertible cumulative preferred stock. The concern dates from 1838 and is the oldest in the manufacture of rubber goods in the United States.

The McGraw Tire & Rubber Co. has applied to be listed on the Cleveland Stock Exchange. Its present capitalization is \$840,000 of 7 per cent cumulative preferred stock and \$1,950,050 of common stock. This will be changed into an issue of 100,000 shares of common stock of no par value and \$2,500,000 of preferred stock, with \$5,000,000 authorized. This will be used to withdraw the old preferred stock, the remainder for working capital. Each holder of common stock will receive two new shares for each share of \$50 par value.

The McGraw Tire & Rubber Co. has been in existence ten years, manufacturing cord and fabric automobile tires, truck tires and inner tubes. The net sales, which were \$746,000 in 1912, will be over \$7,000,000 in 1919. It has paid 12 per cent dividends on its common stock for the last three years.

The Phoenix Rubber Co., Akron, Ohio, that was organized in March, 1916, for the purpose of reclaiming rubber, is issuing \$200,000 of 7 per cent preferred stock of a par value of \$100 a share and \$100,000 of common stock at \$25 a share. Common stock will be sold only to purchasers of preferred stock at the rate of two shares of common stock for one of preferred.

The proceeds of the new issue will go into new buildings and equipment. One large three-story building planned will turn out 300 tires, 900 tubes, 20,000 pairs of soles, 20,000 pairs of heels, and 20,000 of other rubber products a day.

The Goodyear Tire & Rubber Co., Akron, Ohio, has sold \$40,000,000 of a total authorized issue of \$100,000,000 seven per cent cumulative preferred stock to a group of Cleveland, New York and Chicago bankers. The proceeds will be used to retire its two outstanding issues of preferred stock. The new stock will be offered for subscription at \$100 a share and accrued dividends and holders of present Goodyear stock, first and second preferred and common will have the preference.

#### REFINANCING PLANS OF STANDARD TIRE CO.

The Standard Tire Co., Willoughby, Ohio, is paying a 50 per cent stock dividend out of surplus and selling \$350,000 additional stock to its present stockholders; one-half of this is common and the other half preferred. It is also increasing the common from \$350,000 to \$1,000,000 and the preferred from \$150,000 to \$500,000.

About the first of the year R. J. Firestone, Tom A. Palmer, and E. A. Tinsman associated themselves together, interested Akron capital, and purchased the plant of the old Standard Tire & Rubber Manufacturing Co. at Willoughby, Ohio. The refinancing which has taken place is due to increased business requiring additional funds to handle the growing demand for the company's tires. In the last three months, the concern has more than doubled its output and with the additional capital will now be able to increase it materially.

#### DIVIDENDS.

The Advance Rubber Co., Brooklyn, New York, recently declared its semi-annual dividend of four per cent, payable September 10 on stock of record June 30, 1919.

The American Chicle Co., New York City, has declared a dividend of one per cent, payable November 1 on stock of record October 21, 1919.

The American Zinc, Lead & Smelting Co., St. Louis, Missouri, and New York City, has declared its quarterly dividend of \$1.50 per share, payable November 1 on preferred stock of record October 24, 1919.

The Ames-Holden-McCready Co., Montreal, Quebec, has declared its quarterly dividend of one and three-quarters per cent,

payable October 1 on preferred stock of record September 19, 1919.

The Brunswick-Balke-Collender Co., Chicago, Illinois, has declared its quarterly dividend of one and three-quarters per cent, payable October 1 on preferred stock of record September 20, 1919.

The Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, has declared its quarterly dividend of one and three-quarters per cent, payable September 30 on preferred stock of record September 24, 1919.

E. I. du Pont de Nemours & Co., Wilmington, Delaware, have declared a dividend of one and one-half per cent, payable October 25 on its debenture stock of record October 10, 1919.

The General Electric Co., Schenectady, New York, has declared its quarterly dividend of two per cent, payable October 15 on stock of record September 15, 1919.

The General Tire & Rubber Co., Akron, Ohio, has declared its quarterly dividend of one and three-quarters per cent, payable October 1 on preferred stock of record September 20, 1919.

The Goodyear Tire & Rubber Co., Akron, Ohio, has declared its quarterly dividend of one and three-quarters per cent, payable October 1 on first preferred stock of record September 15, 1919.

The Hawkeye Tire & Rubber Co., Des Moines, Iowa, has declared a dividend of eight per cent, payable October 15 on stock of record October 1, 1919.

The Hood Rubber Co., Watertown, Massachusetts, has declared its forty-seventh consecutive quarterly dividend of one and three-quarters per cent, payable November 1 on preferred stock of record October 21, 1919.

The Kelly-Springfield Tire Co., New York City, has declared the following quarterly dividends: cash, \$1 per share, and stock dividend of three per cent, payable November 1 on common stock of record October 18; an initial dividend of \$2 per share, payable November 15 on eight per cent preferred stock of record November 1, 1919.

The Keystone Tire & Rubber Co., New York City, has declared its quarterly dividend of three per cent, payable October 1 on stock of record September 19, 1919.

The National Aniline & Chemical Co., New York City, has declared its quarterly dividend of one and three-quarters per cent, payable October 1 on preferred stock of record September 15, 1919.

The New Jersey Zinc Co., New York City, has declared a quarterly dividend of four per cent, payable November 10 on stock of record October 31, 1919.

The Owen Tire & Rubber Co., Cleveland, Ohio, has started payment of accrued dividends on preferred stock, checks being sent to stockholders who have paid for stock bought during the last quarter of 1917 and the first quarter of 1918. In December the company expects to pay accrued dividends on stock bought and paid for during the second and third quarters of 1918, and will continue this policy until all accrued dividends on preferred stock shall have been paid.

The Portage Rubber Co., Akron and Barberton, Ohio, has declared its regular quarterly dividend of three per cent, payable November 15 on common stock of record November 5, 1919.

The Tyer Rubber Co., Andover, Massachusetts, declared its regular quarterly dividend of \$1.50 per share, payable October 15, 1919, on common stock.

The United States Rubber Co., New York City, has declared its quarterly dividend of two per cent on its first preferred stock and a dividend of two per cent on common stock, both payable October 31 on stock of record October 15, 1919. The common stock dividend is the first since the interruption by the war and is accompanied by the declaration that it is the intention of the company now to place its common stock on a regular eight per cent basis.

The Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania, declared its quarterly dividends of two per cent, payable October 15 and 31st, respectively, on preferred and common stock of record October 3, 1919.

#### RUBBER COMPANY SHARE QUOTATIONS.

The following rubber stock quotations on October 18, 1919, are furnished by John Burnham & Co., 41 South La Salle street, Chicago, Illinois:

	Bid.	Asked.
Ajax Rubber Co., Inc.	95 3/4	96 3/4
Brunswick-Balke-Collender Co., preferred	103	...
Du Pont de Nemours & Co., E. I., common	315	320
Du Pont de Nemours & Co., E. I., debentures	91	93
Firestone Tire & Rubber Co., common	178	180
Firestone Tire & Rubber Co., preferred	98	100
Fisk Rubber Co., The, common	51	52
Fisk Rubber Co., The (new), first preferred	98	101
Fisk Rubber Co., The, 2nd preferred	190	200
Goodrich, B. F., Rubber Co., The, common	82 1/2	83 1/2
Goodrich, B. F., Rubber Co., The, preferred	103 3/4	104 1/2
Goodyear Tire & Rubber Co., The, common	395	402
Goodyear Tire & Rubber Co., The, first preferred	109	111
Kelly-Springfield Tire Co., common	153	154
Kelly-Springfield Tire Co., first preferred	95	97
Lee Tire & Rubber Co.	29 1/2	30 1/2
Marathon Tire & Rubber Co.	...	55
Miller Rubber Co., The, common	188	195
Miller Rubber Co., The, preferred	103	106
Rubber Products Co., The, common	135	140
Portage Rubber Co., The, common	136	141
Swinehart Tire & Rubber Co.	87	90
United States Rubber Co., common	122 1/2	123 1/2
United States Rubber Co., preferred	116 1/2	117 1/2

#### RUBBER INDUSTRIES ATHLETIC LEAGUE BASKET-BALL TOURNAMENT.

Since the close of the baseball season the Rubber Industries Athletic League has turned its attention to basket ball to which it will devote Friday evenings throughout the winter.

It is the intention of the League officials to put on the floor a team which will compare favorably with any team that ever passed a ball. Only one team will be formed from the entire league membership which will represent the League as a body. The line-up will include such well-known stars as Ruckert and Studebaker of Firestone, Reich and Dreyfus of United States and Belsky of Ajax.

The court at Savage's Gymnasium on 60th street near Broadway, in the heart of the rubber district of New York, has been secured for each Friday evening during the season, beginning November 21.

#### WINNERS OF THE WATCH FOBS.

The baseball players, whose individual records during the season won for them the watch fobs presented by A. G. Spalding & Brother were: A. J. Savarese, Ajax Tire & Rubber Co., Inc.; L. A. Mayborn, Kelly-Springfield Tire Co.; W. Ruckert and C. D. Studebaker, Firestone Tire & Rubber Co.; L. Abbott and H. Knox, The Goodyear Tire & Rubber Co.; E. Head, E. Reich, J. Walsh, and J. Savage, United States Rubber Co.; and J. Gray, P. Teed, and G. Scott, The B. F. Goodrich Co.

#### GAS MASKS FOR INDUSTRIAL USE.

The gas mask is rapidly finding its proper place in the industries. Experience has shown that it has a wide application in protecting workmen from the noxious gases and fumes given off in many chemical operations. In rubber factories gas masks could be used around volatile solvents, such as carbon disulphide, carbon tetrachloride, sulphur chloride and certain organic accelerators. In allied chemical plants they give good protection in pyrite smelting and roasting operations wherever sulphur dioxide or oxides of nitrogen are encountered. The war gave great impetus to the development of better gas masks, and now the Bureau of Mines has established a gas mask department at the Pittsburgh Experiment Station, where masks of the army type will be developed for industrial use.

#### AMERICAN ZINC, LEAD & SMELTING CO.'S NEW PLANT.

The American Zinc, Lead & Smelting Co., of St. Louis, Missouri, having found its zinc oxide plant at Hillsboro, Illinois, too small to fill the growing demands for its output, has decided to build a new plant at Columbus, Ohio, on a 40-acre tract of land bordering on the Akron division of the Pennsylvania railroad. Construction will be pushed, and it is hoped to have the works ready for operation by January 1, 1920.

At this plant will be manufactured the Azo ZZZ brand of zinc oxide, and zinc ores free from lead for making this grade will be shipped from the company's mines at Mascot, Tennessee. The company has other mines at Joplin, Missouri, and Platteville, Wisconsin, and smelters at East St. Louis and Hillsboro, Illinois; Caney, Kansas; and Granby, Missouri.

#### WILLIAM D. ANDERSON HEADS BIBB MANUFACTURING CO.

At the recent annual meeting of the Bibb Manufacturing Co., maker of tire fabrics, Macon, Georgia, William D. Anderson was elected president; E. T. Comer, chairman of the board of trustees; J. H. Porter, vice-president; J. I. Comer, second vice-president; Charles H. Williams, secretary and treasurer, and A. A. Drake, assistant treasurer. John A. Porter continues as general superintendent of the four mills at Macon, two at Porterdale, one at Columbus and another at Reynolds.

Extensive improvements are being made at Columbus and in one of the Macon mills, and an auditorium and other community features are to be built in each of the mill villages in Macon. Bonuses have been paid to faithful employees according to period of service from three to ten years. The usual dividends were declared at the annual meeting.

#### NEW EXPRESS PACKING RULES.

Effective December 10 the use of paper wrapping for express packages weighing over 25 pounds will not be permitted. Ordinary paper boxes, wrapped or unwrapped, are also forbidden. For shipments over 25 pounds, wooden containers, or containers of fiberboard, pulpboard or corrugated strawboard material are required. The cartons must be made of materials of specified "test strengths," similar to those required for the freight service, and the containers must bear the stamp of the manufacturers certifying that the material used is of strength required for the weight of the shipment carried in it, as called for in the rules. Shippers are requested to study Supplement No. 5 to Express Classification No. 26, in which these rules are embodied, and copies of which may be secured at any express office.

#### STANDARDIZATION OF GOLF BALLS.

At its first meeting since 1914 the British Golf Rules Committee resolved to submit to the association a new rule standardizing golf balls. Changes in rules by the English authorities are usually followed in America, and golf ball standardization will hardly be an exception. Such an innovation, it is believed, would pave the way for a firmer foundation for international play. With plans in the making in both England and the United States, and entries being booked for the 1920 championships next season may witness all titular play with a standard golf ball.

#### RUBBER STAMPS AID ARCHITECTS AND DRAFTSMEN.

Rubber stamps are being made that represent interior fittings, such as bath tubs, kitchen sinks with the faucets and so on, which should be convenient for architects and draftsmen who have to draw the same thing over and over again in different parts of a plan. The stamp prints the outline drawn to standard scale, and the impression can be touched up as required. Though only used for plumbing fixtures at present, the stamp offers possibilities for much wider application to parts of drawings that must be repeated frequently.—("Popular Mechanics.")



## PERSONAL MENTION.

Duffy and Sears, who have recently opened offices at 133 Front street, New York, as crude rubber brokers, are progressive young men who have grown up in the crude rubber business.

L. A. Duffy began his rubber career with the New York Commercial Co. in 1902 and was transferred from New York in 1907 to Manáos where he remained two years with A. H. Alden & Co., the parent concern of the New York

Commercial Co. From 1913 to 1916 he was connected with W. R. Grace & Co., New

York City, resigning to go with the Hagemeyer Trading Co. as assistant manager of the crude rubber department. Here he remained for two years and after a few months with J. Frank Dunbar, New York City, resigned to form the partnership with Mr. Sears.



S. H. SEARS.

S. H. Sears also served his apprenticeship with the New York Commercial Co., from 1903 to 1911, when he went to the Firestone Tire & Rubber Co., Akron, Ohio, as a crude rubber expert, and in 1916 was sent to the Far East, visiting the Malay Peninsula, Java, and Sumatra, in the interest of the Firestone company. Mr. Sears was assistant manager of the Firestone crude rubber department when he resigned to engage in business with Mr. Duffy.

The following appointments have been made by The B. F. Goodrich Co., Akron, Ohio: Edward H. Fitch, for three years manager of Philadelphia branch, promoted to the position of manager of manufacturers' sales for the entire Goodrich line, with headquarters at Akron; C. H. Smith, for twenty years in charge of Diamond sales in Chicago and the mid-west district, promoted to managership of Chicago branch, in charge of both Goodrich and Diamond tire sales and the entire Goodrich line of products; N. E. Oliver, for some years in charge of Diamond sales in the New York district, appointed manager of the New York branch, supervising sale of all Goodrich products and retaining supervision of Diamond sales; E. P. Rowen, for fourteen years manager of Chicago branch, appointed manager of Diamond tire sales for the United States, with headquarters at Akron; and H. J. Morehead, for four years manager of the New York branch,



L. A. DUFFY.

promoted to manager of Philadelphia branch, in charge of sale of both Goodrich and Diamond tires and the entire Goodrich line of products.

F. K. Stephenson has been appointed export manager of The Portage Rubber Co., Akron and Barberton, Ohio, with headquarters in New York City. He was formerly export manager for the Republic Rubber Co. in the same city.

B. C. Swinehart has resigned as general manager of the United & Globe Rubber Co., Trenton, New Jersey, and will return to Akron, Ohio, where for six years he was with the Swinehart Tire & Rubber Co.

L. G. Chase, formerly efficiency engineer of the Rosemary Manufacturing Co., Rosemary, North Carolina, has been appointed mechanical engineer of the Yarnall-Waring Co., Chestnut Hill, Philadelphia, Pennsylvania.

E. V. Peters, general sales manager of The New Jersey Zinc Co., New York City, will spend a month in the West, accompanied by R. M. Neumann, of the Chicago office, manager of western sales, and will visit among other cities, Denver, San Francisco, Los Angeles, Portland (Oregon), and Seattle.

C. T. Anderson has been appointed manager for The Portage Rubber Co., Akron and Barberton, Ohio, succeeding B. Anderson-Smith, resigned, at Philadelphia, Pennsylvania.

S. B. Woodbridge has been made director of sales of the lithopone, dry colors and pigment division of E. I. du Pont de Nemours & Co., Wilmington, Delaware. He had been identified with Harrison Bros. & Co., Philadelphia, for ten years previous to the taking over of that concern by the Du Pont company, and was also sales manager for the Beckton Chemical Co., manufacturer of lithopone and allied with the Harrison company at the time both were taken over by the Du Pont company.

Leslie E. Freeman has been appointed resident representative of the American Chamber of Commerce for Brazil in the United States, with offices at 37 Liberty street, New York City.

Curtis L. Moody, for the past four years with The Fisk Rubber Co., Chicopee Falls, Massachusetts, and manager of the schedule and mold engineering department since its establishment two and one-half years ago, has resigned to accept an executive position with The Perfection Tire & Rubber Co., Fort Madison, Iowa.

E. T. Peterson has been appointed manager of the Buffalo, New York, branch of the Pennsylvania Rubber Co., Jeannette, Pennsylvania.

Captain Harry B. Tuttle has been appointed special representative for bicycle and motorcycle tires and tennis balls manufactured by the Pennsylvania Rubber Co., with headquarters at Jeannette, Pennsylvania.



E. H. FITCH.



C. H. SMITH.



N. E. OLIVER.



E. P. ROWEN.



H. J. MOREHEAD.

### THE RUBBER TRADE IN RHODE ISLAND.

*By Our Regular Correspondent.*

**A**N INCREASE of \$20,960,780 in all kinds of property values in Providence is shown by the official assessment of the Board of Tax Assessors for the year 1919. In the list of more than 1,000 individuals, firms and corporations that are assessed upon a valuation of \$50,000 or more are the following that are directly, or indirectly, associated with the rubber industry: American Multiple Fabric Co., \$94,380; Augustus O. Bourn, \$84,640; Bourn Rubber Co., \$272,580; Walter S. Ballou, \$87,640; Joseph Banigan estate, \$1,045,580; Samuel P. Colt, \$219,060; Mary E. Davol, widow of Joseph Davol, \$834,500; Davol Rubber Co., \$500,000; Glendale Elastic Fabric Co., \$117,300; International Braid Co., \$1,079,320; William B. McElroy et ux, \$118,100; Mechanical Fabric Co., \$202,500; Revere Rubber Co., \$1,346,200; Rhode Island Hospital Trust Co., trustee under the will of Joseph Davol, \$465,100; James E. Sullivan (trustee), \$288,780; United States Rubber Co., \$1,651,960.

The Revere Rubber Co., Providence, has purchased additional land at Valley and Eagle streets, aggregating nearly 35,000 square feet for the purpose of enlarging its plant. This with the land already owned gives the company a tract containing more than 1,000,000 square feet.

The property of the American Locomotive Works, containing about 450,000 square feet, was acquired more than a year ago and the rebuilt and new structure were recently put in operation for the manufacture of light rubber goods, especially druggists' sundries.

Since taking over the old Banigan Rubber Co.'s plant several years ago the Revere Rubber Co. has steadily increased its plant. The original factory buildings are now used for the manufacture of solid rubber tires for motor trucks, the production of pneumatic tires and tubes having been transferred to other plants of the United States Rubber Co., which controls the Revere Rubber Co.

Work was commenced during the past month on new buildings that will add nearly 60,000 square feet of floor space and cost approximately \$200,000. One of the new buildings will be used for laboratory purposes and the other for manufacturing. Both buildings will be of concrete and steel, three stories high. The laboratory building will be 150 by 50 feet and the manufacturing building, 120 by 100 feet.

Another forward step in the movement for the welfare of its employees has been taken by the National India Rubber Co., at Bristol, by the installation of an excellent dental equipment. The outfit consists of a sterilizer and stand, an air compressor, unit equipment and dental chair, an aseptic table stand, dental cabinet, a Bosworth light and a gas oxygen outfit. Employees may have dental work performed at only a nominal fee to help cover the cost of material used. Dr. M. J. O'Brien is in charge.

A legal department has also been established which is to be conducted for the sole interests of the employees of the corporation. Judge Frank H. Hammill, attorney-at-law, has been engaged to maintain an office at the company's plant where he will spend a portion of every working day. Legal advice concerning personal and property rights will be provided without charge.

The Glendale Elastic Fabric Co. has commenced extensive alterations and repairs at its four-story building in Providence.

The Davol Rubber Co. has commenced the erection of a one-story pumping house at its plant in Providence.

P. Raymond Wesley has been made general manager of the Davol Rubber Co., Providence, succeeding Edwin M. Caldwell who resigned October 1. Mr. Wesley has been with that company in responsible positions for about 25 years.

Day and night shifts are being employed at the International Rubber Co.'s plant in West Barrington, owned by the O'Bannon Corporation, owing to the pressure in the market for carriage cloth, one of the products of this concern.

A twelve-ton boulder has been placed on the lawn in front of the office of the Alice Mill of the Woonsocket Rubber Co., facing Fairmount street, Woonsocket, upon which has been mounted a bronze honor roll tablet of the employees of that corporation who went from the Alice Mill into various branches of the country's service during the World War. It bears the names of 90 employees. The memorial was dedicated with appropriate exercises on Saturday, October 11, in the presence of the entire force.

The Woonsocket Rubber Co. has received recognition from the United States Government for taking back into its employ every former worker who went into military or naval service, who applied for his place upon returning. Of the employees who went into service, more than two-thirds are reported as being back at their old jobs or better ones.



WAR MEMORIAL ERECTED AT THE ALICE MILL OF THE WOONSOCKET RUBBER CO.

### WESLEY APPOINTED GENERAL MANAGER.

**T**HE APPOINTMENT of P. R. Wesley to the position of general manager of the Davol Rubber Co., Providence, Rhode Island, was a natural and fully deserved promotion of one who had risen step by step during a service of more than a score of years with that corporation.

Mr. Wesley was born in Columbia, Connecticut, September 3, 1871, and was educated in Hartford, that state, where he was graduated with the degree of B.S. from Trinity College in 1894. For three years, while in college, he served on the "Hartford Telegram," and after graduation became buyer for a department store in Providence, Rhode Island. He entered the employ of Joseph Davol, founder of the Davol Rubber Co., in a private capacity in 1898, and then served successively in the pricing and purchasing departments and as assistant to general manager C. J. Davol, now president of the company. Mr. Wesley was made manager of sales four years ago, and on October 1, this year, he became general manager.



P. R. WESLEY.

### THE RUBBER TRADE IN NEW JERSEY.

*By Our Regular Correspondent.*

#### TRENTON NOTES.

**D**ISTRICT MANAGERS representing the Empire Tire & Rubber Co. in all sections of the country recently held a three-day conference at the plant at Trenton. Twenty-two representatives attended and plans were arranged for launching the sales campaign next year. Officials announced at the session that bright prospects are held for the coming year, when all records in the automobile tire industry are expected to be shattered.

The Empire Tire & Rubber Corp., Trenton, has engaged a number of women to act as inspectors of rubber goods at the plant.

The Zee-Zee Rubber Co., Yardville, New Jersey, has inaugurated a plan to establish branches in the various cities of New Jersey. The company requests that a merchant in each town deposit between \$250 and \$5,000, according to size of territory, with the rubber corporation. The deposit will be held for one year at six per cent interest, the principal being returned to the owner when business connections are severed.

Nicholas Loukopulos, a former Trenton merchant, sailed on October 20 for Patras, Greece, where he will introduce the products of the Acme Rubber Manufacturing Co., and establish agencies there for the sale of tires. The Acme company believes that with automobiling increasingly popular in Greece a big demand for American tires will ensue and the Trenton concern is the first in that field.

The Thermoid Rubber Co., Trenton, has appointed John T. Spicer general sales manager, with offices at the Trenton factory. Mr. Spicer has been advertising manager of the company for some time.

The Atlas Tire & Rubber Co., Trenton, has changed its name to the Trent Rubber Co.

#### MISCELLANEOUS NEW JERSEY NOTES.

Dr. Frederic Dannerth, a leading authority on industrial chemistry, delivered on October 17 the first of a series of thirty lectures on corporation chemistry. This and other lectures in the same group deal with advance industrial surveys, from the point of view of the industrial chemist, of original sources of raw materials and purification plants in the primary markets, including mines, forests, plantations, etc. Subsequent lectures will give directions in the line of efficiency in executive and advisory departments, of laboratory management for business purposes, and of the economic department. The lectures will be given at the College of Technology, 367 High street, Newark, New Jersey, on Friday evenings.

The Victory Tire & Rubber Co. has changed its name to Rydon Tire & Rubber Corp. and discontinued its New York office at 5 Columbus Circle. It is temporarily located at 610 Eighth avenue, Asbury Park, New Jersey, while its new factory is being built.

The Driver-Harris Co., Harrison, New Jersey, is building a three-story reinforced concrete addition to its factory, 50 by 100 feet, to cost \$50,000.

The Howe Rubber Co., of New Brunswick, New Jersey, has opened a new cafeteria on the roof of its plant for the comfort and convenience of employees. The opening was a chicken dinner for the 400 employees. The meals are being served at cost. The idea was inaugurated by W. H. Albert, comptroller of the company.

Charles Andrew Perkins, formerly office manager of the Endurance Tire & Rubber Co., New Brunswick, New Jersey, died recently at his home in New Brunswick, after a long illness, aged 32. He was a member of the New Brunswick Lodge of Elks and sang in the Christ Church choir at that place.

The Braender Tire & Rubber Co., Rutherford, New Jersey, is putting up a four-story addition to its factory, which it is expected will double its present production capacity.

### THE RUBBER TRADE IN MASSACHUSETTS.

*By Our Regular Correspondent.*

**T**HE OLD BAILEY RUBBER STORE, for over 30 years on Boylston street, Boston, is holding a sale preparatory to removing to an even more central location in the shopping district. The new store will be at 11 and 13 Avon street, directly adjoining the Jordan, Marsh Co. annex. The business will occupy the entire four-story and basement building, which will be refitted and equipped for the purpose.

The C. J. Bailey Co., which succeeded to the business of the late Mr. Bailey, will continue to carry a full line of all kinds of rubber goods, but will add thereto a complete line of women's ready-to-wear garments, gowns, shirtwaists, etc. M. S. Lawrence, the treasurer of the company, who will have general management of all departments, was for more than 30 years associated with the late C. J. Bailey, and he will be assisted by H. E. Bailey, son of the founder of the house, and for several years an assistant to his father. While these new lines are to be added, the same attention will be given to the rubber trade, in which the house has become famous.

The embargo on transportation has no terrors for the Ajax Rubber Co., of Trenton, New Jersey, at least as far as the Boston branch of the company is concerned. Motor trucks are bringing tires to this city, the run from the factory being made in 15 or 20 hours. Big trucks holding about 700 tires are used, and on the return trips they are loaded with fabric. Thus time and expense are saved, with a certainty of satisfactory service.

C. E. Aldridge has been appointed manager of the Boston branch of The Portage Rubber Co., Akron and Barberton, Ohio, succeeding G. D. Niles, resigned.

Richards & Co., Inc., Boston, one of the oldest houses in the metal trade, established over a century ago, has recently entered the crude rubber business, making a specialty of Ceylon rubber. This new department is in charge of John Heard, who has been associated with the house for the last decade.

Thomas C. Cummings, for many years connected with the United States Rubber Co., and its subsidiary companies, has associated himself with E. M. Hamlin & Co., bankers, Boston, where he is devoting much of his time to rubber industrial investments. Mr. Cummings was first identified with the National India Rubber Co., Bristol, Rhode Island, later with the Mechanical Rubber Co., Cleveland, Ohio, and more recently until October was located with the mechanical department of the Boston office of the United States Rubber Co.

H. C. Krimmel, who has been manager of truck tire sales in New England for The B. F. Goodrich Rubber Co., Akron, Ohio, has been transferred to the Chicago branch of that concern. He is succeeded by Robert C. Freeman, who has been with the company several years, first as truck tire salesman in some counties of this state, then given exclusive Boston territory, and later made special sales representative to large consumers of truck tires.

The Boston Rubber Shoe Co. has opened a fine recreation room on the first floor of one of its big buildings at its Plant No. 2 in Melrose. The dedication exercises were held October 7, when various officials of the company were present, and addresses were delivered by Superintendent Philip C. Benjamin and by Mayor Adams of Melrose, who highly commended the efforts of the management in its social service to its employees. An interesting musical program was given under the auspices of young women



employed in the factory, and a dance followed the formal exercises. The new recreation room is large, well-lighted, has an excellent dancing floor, a new piano and will accommodate about 400 persons. A matron and teacher of dancing and of physical exercises will be present when the hall is opened for the brief recess period in the forenoon, in some departments, and during the noon hour.

The Associated Industries of Massachusetts held a two-day annual meeting in Boston October 22 and 23, which was presided over by its president, Frederic C. Hood, treasurer and general manager of the Hood Rubber Co., of Watertown. Mr. Hood made two addresses during the conference, one at the opening, and another on the second day, this latter being on the subject of "Employment Relations." The address was an able one and received the hearty approval of the entire assemblage. Mr. Hood retired from the presidency at this meeting and was succeeded by Charles A. Andrews, who is prominently connected with a leading fisheries company. William H. Gleason, formerly of the Revere Rubber Co., Chelsea, Massachusetts, was reelected treasurer.

Chester J. Pike, who for several years was New England selling agent for the United States Rubber Co., but who for the last decade has occupied a prominent position in the advertising world as New England manager of Hoyt's Service, Inc., was chairman of the entertainment committee at the convention of the American Association of Advertising Agencies, which was held in Boston the middle of October.

The Boston Woven Hose & Rubber Co., Cambridge, finds the growth of its leatherette department increasing to such an extent that it is erecting a special building on a lot adjoining its present plant on Portland street, Cambridge. The plan of the building is to have each operation of the manufacture isolated from all others and each room is separated by a twelve-inch fire wall. Four concrete storage bins are provided for the storage of chemicals.

An interesting feature is the arrangement for carrying off vapors peculiar to the manufacture of leatherette. These vapors, heavier than air, are carried away through the floor. The company is developing an extensive foreign trade for its leatherette.

The Converse Rubber Shoe Co., Malden, will soon build a five-story reinforced concrete storehouse, 75 by 52 feet, at an estimated cost of \$75,000.

The United Shoe Machinery Corporation is building a three-story reinforced concrete building at its Beverly, Massachusetts, plant. It will be 400 feet long and 120 feet wide, and will be used mainly as a storage warehouse.

The Tyer Rubber Co., Andover, Massachusetts, has greatly enlarged the scope of its machine shop, where a large amount of new equipment has been installed, thus better enabling the company to handle its repairs, and also to manufacture its own mold equipment for tires and sundries. The company reports a marked increase in its export trade in druggists' sundries during the present year. A dinner gathering of the management and employees was held at the Phillips Inn, the evening of October 27, when plans for closer cooperation and mutual service were discussed.

The Fisk Rubber Co., Chicopee Falls, Massachusetts, has organized an educational department, to which all boy employees are eligible. It is under the supervision of Miss Louise Scott. English, spelling and bookkeeping are the subjects now taught, and shorthand and typewriting may be added later. The class is held three nights a week, the sessions lasting from 5.30 to 6.45 o'clock.

The Firestone Tire & Rubber Co., Akron, Ohio, has appointed G. I. Engle, formerly manager of its branch at Springfield, Massa-

chusetts, to be special manufacturers' representative for the New England district.

#### EASTERN NOTES.

The Norwalk Tire and Rubber Co., Inc., Norwalk, Connecticut, is building a five-story addition to its factory, 85 by 160 feet. The foundations are now being put in and it is expected that the building will be completed by March 1, 1920.

The Goodyear Cotton Mills, Inc., Killingly, Connecticut, recently offered its employees an opportunity to subscribe to its seven per cent cumulative stock. About 200 responded, of whom 13 took stock to the amount of about \$1,000 each and 36 others \$500 each, the average subscription being \$270, and the total, \$54,000. This stock carries a bonus of three per cent to all who subscribe and remain employees of the company.

The Mechanical Tire Co., Inc., 49 North Third avenue, Mount Vernon, New York, has increased its capital to \$100,000 but no stock has as yet been issued. Aron Rubin is secretary.

The Amalgamated Tire Stores Corp. of Delaware has been organized to acquire the assets of the Newman Tire & Rubber Co., Inc., New York City, now operating eleven stores in New York and Pennsylvania and one in Baltimore, Maryland. No indebtedness will be incurred and the new corporation will open thirty to forty more stores in other cities. The officers are: Stanley Newman, president; Arthur Newman, vice-president; and William Freiday, secretary and treasurer; directors—J. Robinson-Doff, Edward R. Hewitt, George M. L. LaBranche, Jay Rathbun, Jason Rogers, and Frederick A. Travis, in addition to the officers named above. The audit and inventory were made by A. H. Wahn & Co., 120 Broadway, New York City.

The Crompton & Knowles Loom Works, Worcester, Massachusetts, has disposed of its branch plant at 17th and Glenwood avenue, Philadelphia, but has not yet vacated the premises. New property has been purchased on the northwest corner of Rosehill street and East Allegheny avenue, where such changes as may be necessary will probably be made in the building already on the site. The company is also building an addition to its Worcester foundry and increasing the foundry capacity at its works at Providence, Rhode Island.

The Keystone Tire & Rubber Co., Inc., Keystone Building, New York City, has expanded its system of chain stores for automobile tires and tubes so that the number is now 171. They are to be found in every state in the Union and in all the important cities. Each is incorporated separately as a subsidiary of the parent company. The company expects \$20,000,000 worth of business a year.

A. J. Sandhoff, who has been interested in various lines of rubber production for many years, has been made assistant superintendent of the Habirshaw Electric Cable Co., Yonkers, New York. Mr. Sandhoff had been connected with rubber companies in the middle west for the past six years.

Adolph Hirsch & Co., Inc., 53 Park Row, New York City, has been incorporated by Adolph and I. Henry Hirsch, the members of the former copartnership of Adolph Hirsch & Co., to continue the business of importing rubber and other products from Brazil. The officers are: Adolph Hirsch, president; I. Henry Hirsch, vice-president and treasurer; and Arthur A. Glass, secretary.

The following tire and rubber companies incorporated within the last few years in the State of New York, have been dissolved: Durable Tire Co., Ironclad Tire Co., Overroad Tire Co., Queen Rubber Co., and the Worthmore Tire Co. The address of all at the time of incorporation was 1789 Broadway, New York City.

The L. H. Butcher Co., Inc., having outgrown its quarters, has removed from 100 William street to 239 Front street, New York City, where it has consolidated its office and warehouse in the five-story and basement building on which it has taken a long

term lease. Increased quantities of color and chemical stocks will be carried.

The Pennsylvania Rubber Co., Jeannette, Pennsylvania, has elected George W. Daum assistant general manager, while H. Wilfred DuPuy has resigned his position as treasurer in favor of A. H. Price.

The Vulcanized Rubber Co., of Morrisville, Pennsylvania, is erecting a new brick office building 80 by 120 feet, adjoining its plant.

J. F. Sieberling, son of F. A. Seiberling, president of The Goodyear Tire & Rubber Co., Akron, Ohio, has been elected president of the New Castle Rubber Co., located at New Castle, Pennsylvania.

#### GOODRICH ADVERTISING DIRECTOR.

THE APPOINTMENT of E. D. Gibbs as advertising director of The B. F. Goodrich Co., Akron, Ohio, is in line with the policy of that company in maintaining its publicity campaign among the leading advertisers of the country.



E. D. GIBBS.

Mr. Gibbs has a national reputation in the advertising world. For twelve years he was advertising director of the National Cash Register Co., Dayton, Ohio, during which time he built up one of the largest advertising organizations in the country and gathered about him a staff of experts in every branch of publicity. Under his direction the company acquired the second largest printing plant owned by a private corporation.

Resigning his position there, Mr. Gibbs associated himself with Robert Patterson, former vice-president of the National Cash Register Co. and conducted a business in Chicago as advertising and sales counsel. Five years later he took charge of the publicity of the Bush Terminal Co., New York City, resigning that position to become associated with The B. F. Goodrich Co.

His appointment as advertising director is in harmony with plans of H. E. Raymond, first vice-president, to be relieved of the supervision of the company's advertising and concentrates the full direction of advertising under the personal supervision of W. O. Rutherford, second vice-president. Mr. Gibbs' appointment in no way disturbs the present advertising department, which will be continued as heretofore under the direction of E. C. Tibbetts, advertising manager.

Mr. Gibbs has gained a reputation as a writer and lecturer on advertising topics and has been prominently identified with the development of advertising, having held the office of president of the Associated Advertising Clubs of the World, of the Sphinx Club of New York and the New York Sales Managers Club. He is also a charter member of the Sphinx Club of London, England.

#### THE RUBBER TRADE IN OHIO.

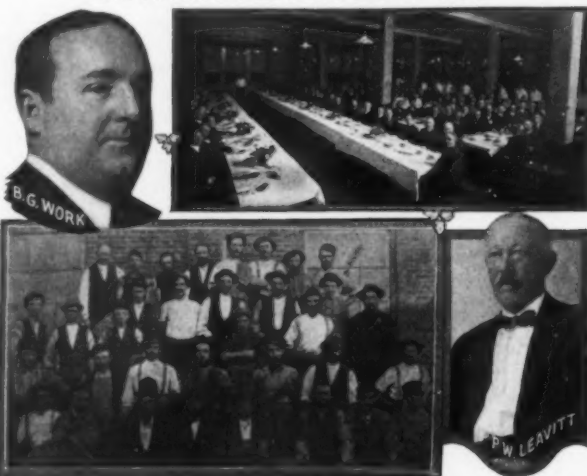
*By Our Regular Correspondent.*

IN THE ACCOMPANYING ILLUSTRATION, the upper picture shows the reunion dinner given in October by The B. F. Goodrich Co., Akron, to those of its employees, men and women, who had been in its service for twenty or more years. B. G. Work, president, presented gold service pins to 160 men, all but twenty-four of whom are still on active duty. The pins bear the company's "wreath and G" and four stars, each star representing five years with the concern. In two cases father and son went up together; there were cases of two and of three brothers having

served the twenty years together; six of the veterans were women.

Among the officials who have served twenty years or more are: B. G. Work, president; H. E. Raymond, C. B. Raymond, H. K. Raymond, and W. A. Means, vice-presidents; and E. C. Shaw, a director. Among the speakers was Percy Leavitt,

THE GOODRICH REUNION OF LONG SERVICE EMPLOYEES.



GOODRICH WORKING FORCE IN 1873.

whose portrait is shown, who has been with the company for thirty-nine years. He read a history of the company, illustrated with slides, describing his experiences during that period. The lower group represents the entire working force of the Goodrich company in 1873, numbering less than 100 where to-day it is more than 20,000.

#### AKRON NOTES.

The Housing Bureau of The B. F. Goodrich Co. is offering to employes the opportunity of buying homes by the payment of \$700 to \$900 down, and the balance in monthly instalments. The houses are now being constructed in one of Akron's residential districts and will sell for from \$7,000 to \$9,000.

Liberty Park is henceforth to be called "New Goodrich Field" until familiarity with the name makes "Goodrich Field" sufficient. Improvements are to be made during the coming season, and it is expected that the park will be made one of the finest industrial athletic fields in the country.

A. G. Underwood, until recently manager for The B. F. Goodrich Co., Akron, in Milwaukee, Wisconsin, has succeeded H. M. Bacon as sales manager for Diamond Tires and accessories.

J. C. Lawrence, assistant treasurer of the B. F. Goodrich Co., Akron, has been assigned to the post of director of branch operations, succeeding C. E. Cook, who is now director of mechanical sales.

T. B. Tomkinson, connected with The B. F. Goodrich Co. since its merger with the Diamond Rubber Co., has been promoted to the position of assistant to the comptroller of the company.

He began his career in the rubber industry as a cost clerk for the Diamond Rubber Co. and was brought into prominence because of his intimate knowledge of the company's business at the time of the merger, after which he was made assistant auditor, a position which he held until his recent promotion.

E. C. Shaw, for many years vice-president of The B. F. Goodrich Co., is working energetically for increased facilities for the prevention and cure of tuberculosis in Akron. He is also head of the committee which will erect one of the most extensive polyclinics in the world as a memorial to the Akron soldiers and sailors who participated in the world war. The latest move made by Mr. Shaw is the taking over by Summit County of a large sanitarium formerly operated by five counties.

Employees of the Firestone Tire & Rubber Co., Akron, were

offered until October 6 to purchase from one to five shares of seven per cent preferred stock of the company in addition to that to which they were entitled as common stockholders.

The Firestone Tire & Rubber Co., Akron, entertained 100 local tire dealers at luncheon September 24 and took them through plant No. 2 which has recently been put into operation. The luncheon was given to introduce George H. Bacon, formerly of Baltimore, Maryland, who has recently been appointed manager of the local sales branch of the company. It was announced that the output of the company has been increased from 22,000 to 36,000 tires per day for the coming year.

E. C. Vermillion, for the past year identified with the Americanization work of the Firestone Tire & Rubber Co., has been made director of Americanization work of the public schools following the resignation of E. P. Wiles, formerly of Cleveland.

The latest development in industrial sports in Akron is the formation of an industrial polo league, under the management of J. D. Thomas, formerly county treasurer. The Firestone Tire & Rubber Co., The B. F. Goodrich Co., The Goodyear Tire & Rubber Co. and The Miller Rubber Co. are among the rubber factories who have joined the league. The games are to be played in a local amusement park.

The Miller Athletic Association of The Miller Rubber Co., Akron, has won the industrial tennis championship of the city.

The Akron Rubber Mold & Machine Co., Akron, has neither changed hands nor is considering such a move. To the contrary, the officers of the company, consisting of S. W. Harris, president and general manager; W. E. Wilson, vice-president and assistant general manager, and G. F. Hobach, secretary and treasurer, are all active in their respective positions and authorize the announcement that decision has been reached to purchase and install new equipment and increase the size of the plant, which will enable the company to take care of its rapidly increasing business and insure improved service on deliveries to its customers.

Arthur H. Leavitt, who returned to The B. F. Goodrich Co., Akron, in charge of pneumatic truck tire and motor products sales when he received his discharge as major in the Motor Transport Corps, has resigned to accept the position of assistant sales manager with The Akron Rubber Mold & Machine Co., Akron. He had been with the Goodrich company eight years prior to 1917, when he was the first Goodrich employe to enlist.

The Portage Rubber Co., Akron and Barberton, has elected M. S. Long president in place of W. W. Wildman, resigned. The following appointments have also been made: H. M. Kerr, formerly auditor of factory costs and accounts for The B. F. Goodrich Co., Akron, controller; E. W. McCreery, formerly assistant sales manager of the Republic Rubber Co., Youngstown, Ohio, assistant sales manager; B. M. Schreckingost, special factory representative with headquarters at the factory.

The company has ordered the preparation of plans and specifications for a three-story reinforced concrete addition to the factory, to cost approximately \$200,000.

The Rubber City Clearing House Co., Akron, has increased its capitalization from \$200,000 to \$500,000, and is building a four-story building of modern construction, 125 by 150 feet with railroad frontage, which will cost approximately \$150,000. The concern deals in blemished seconds and surplus stocks of tires and also in raincoats, rubber shoes, hot-water bottles, etc., in the nature of seconds.

The India Tire & Rubber Co., Akron and Mogadore, Ohio, has appointed William G. Lerch superintendent. He was formerly in charge of tire production for The Miller Rubber Co., Akron.

The insurance plan of The Goodyear Tire & Rubber Co., Akron, recently adopted, operates on a service basis and not on

that of salary. Employees may carry as high as \$3,000 insurance after 20 years with the company. Ten years entitles a man to \$2,000 and 15 to \$2,500. The initial policy is for \$1,000. These amounts are not affected by the State Workmen's Compensation Fund.

The Goodyear Tire & Rubber Co. has been cited by the War Department for its part in the war. The flag which was given the company as an acknowledgment of its patriotism is hanging in the lobby of the factory office of the company.

Miss Gertrude V. Seiberling, daughter of F. A. Seiberling, president of The Goodyear Tire & Rubber Co., Akron, was married to John L. Handy on October 4, 1919, at Stan Hywet Hall, the Seiberling residence.

The American championship in balloon racing was won by Ralph H. Upson, pilot of the balloon "Goodyear II" of the Akron Aero Club, when he won the recent race which started October 1 from St. Louis, Missouri. Upson was the seventh out of the ten contestants to report landing and the fourth to land in Canada, coming down at 8:55 p. m. October 2 at Dunham, Quebec, in a severe thunderstorm. The duration of the trip was 26 2/3 hours and the straight line distance, 1,020 miles. Upson also won the 1913 race and R. A. D. Preston, another Goodyear man whose picture appeared in THE INDIA RUBBER WORLD for November 1, 1918, won in 1914. Both Upson and Preston are therefore qualified to enter the international balloon race in 1920.

"Every foreign-born workman speaking English and no man without his first papers by 1921," is the slogan of The Goodyear Tire & Rubber Co. in its Americanization program, aided by the factory school where aliens are taught to read, write, and speak English. There are now 61 classes weekly, and the entire course consists of 250 hours of class-room work in three grades comprising conversational English, history and government, and the ideals of Americanization. Each student is advanced to the next higher class as soon as capable.

#### CLEVELAND NOTES.

The Thermoid Rubber Co., Trenton, New Jersey, has opened a local sales office at 1302-1303 Swetland Building, Cleveland, in charge of H. R. Portugal. Carl A. Schell, in charge of engineering, also has his headquarters at the same place.

The D. & M. Cord Tire Co., Engineers Building, Cleveland, is building a one-story brick building, 140 by 220 feet, for the exclusive manufacture of cord tires, and is planning a three-story brick, steel, and concrete building, 120 by 285 feet, to be started during the coming year. The manufacture of inner tubes will be postponed until completion of the latter building. The production of cord tires is planned to start about February 1, 1920.

The McElrath Tire & Rubber Co., Cleveland, has accepted the factory site offered by the Chamber of Commerce of Ravenna, Ohio, which consists of ten acres of land west of the Erie railroad depot, adjoining the railroad on Oakwood street. The formal acceptance written the Ravenna Chamber of Commerce, signed by R. P. McElrath as president of the company, was dropped in a box from an airplane so that it landed on the new factory site. Ground will be broken in the near future.

The Zenith Tire & Rubber Co., Leader Building, Cleveland, has purchased 236 acres of land at the east edge of the city, between Euclid avenue and the Nickel Plate and New York Central railroads. Plans are being prepared for a group of buildings consisting of a power plant, main factory, and administration building, to cost approximately \$1,000,000. Construction work will start early next year.

#### MISCELLANEOUS OHIO NOTES.

The Pennsylvania Rubber Co., East Jeannette, Pennsylvania, has opened a branch office at 120 East 8th street, Cincinnati, in



charge of J. G. Smith, recently returned from overseas where he served as a lieutenant in Germany.

The Kelly-Springfield Tire Co., New York City, has leased for ten years the six-story and basement building at 212-214 East 8th street, Cincinnati, Ohio, where the Cincinnati branch will be established.

Announcement has been made by the Rubber Products Co., at Barberton, that its output of tires will be doubled within the next sixty or ninety days. A large factory addition was recently completed and is now being equipped with machinery. This concern is comparatively new in the tire business, having first engaged in it only two years before the war. Previous to that time it specialized on rubber sundries only.

The vice-president and factory manager of The Master Tire & Rubber Co., Dayton, Ohio, George H. Witsaman, has had 18 years' active experience in the tire industry. He was with The B. F. Goodrich Co., Akron, from 1901 to 1908, being the sixth man in its employ to build automobile tires. From 1908 to 1915, Mr. Witsaman was with The Dayton Rubber Manufacturing Co., Dayton, as superintendent, and from 1917 to June 1, 1919, as factory manager. In the interim from 1915 to 1917 he was experimental and construction engineer in the experimental department of The Goodyear Tire & Rubber Co., Akron. Mr. Witsaman remained with the Dayton company until



G. H. WITSAMAN.

June 1 of the present year when he resigned to assist in the formation of The Master Tire & Rubber Co.

A convention of managers and salesmen including the export manager of The Mason Tire & Rubber Co., Kent, Ohio, was held October 9-10, for the purpose of going over in detail the policies of the company for the coming year. Branch managers from all over the country were present.

The Steele-Alderfer Co., Cuyahoga Falls, Ohio, manufacturer of woolen crates for transporting tires, hose reels, etc., has increased its capital stock from \$85,000 to \$250,000, to take care of its increasing business. Ground has been broken for the erection of a number of fireproof buildings, and the present main structure will be enlarged by a two-story addition, 60 by 100 feet. The new buildings will include a two-story one, 40 by 100 feet, to accommodate a new large band sawmill; a new office building; a garage; and a dry kiln. Electrical machinery will be installed and a traveling crane to replace the present derrick system for handling logs. The officers of the company are: T. A. Steele, president; Charles McCuskey, vice-president; W. H. Schnabel, secretary; F. R. Steele, treasurer.

Charles J. Hazen has been appointed advertising manager of The Marathon Tire and Rubber Co., Cuyahoga Falls, Ohio.

The Perfect Rubber Co., Mansfield, Ohio, plans to begin the manufacture of rubber novelties, water bottles, and druggists' sundries in the near future.

The De Vilbiss Manufacturing Co., Toledo, Ohio, manufacturer of atomizers, etc., has increased its capital stock from \$700,000 to \$2,000,000 for the purpose of carrying on its increased business. It has also purchased the plant of the Lenk Wine Co., in West Toledo, to provide a new factory for its Aeron system. This includes seven brick buildings and four of wood, with a total floor space of 75,000 square feet. These will be remodeled and modernized.

The East Palestine Rubber Co., East Palestine, Ohio, at its adjourned annual meeting, elected an entirely new board of directors, namely: C. F. Adamson, J. F. Stoddard, J. H. Whitten-

berger, William G. Morris, C. F. Woods, S. B. McClure, and P. H. Murphy. The following officers were elected: C. F. Adamson, president and treasurer; S. B. McClure, vice-president; and J. F. Stoddard, secretary.

#### JOHN YOUNG, FIRESTONE'S CHIEF CHEMIST.

JOHN YOUNG, chief chemist of the Firestone Tire & Rubber Co., Akron, Ohio, was born in Perth, Scotland, in 1886 and educated at Perth Academy and the Royal Technical College at Glasgow, taking degrees with honors in organic chemistry.



JOHN YOUNG.

Mr. Young started as assistant chemist with Thomas de la Rue & Co., London, England, his investigations being principally on gums and mucilages, printing inks and paper, and hard rubber for fountain pens. Later he proceeded to British Guinea, being appointed assistant chemist on a rubber and sugar plantation, and during his two years' stay there, he had charge of all the scientific work in connection with the rubber production, including collection and setting out of seeds and seedlings, fertilization experiments, investigation of plant diseases, collection and coagulation of latex.

In 1911 he went to Akron, Ohio, to work in the research laboratory of the Diamond Rubber Co., under Dr. Spence, and while there he published several papers, in collaboration with Dr. Spence, on the theory of vulcanization.

In January, 1916, Mr. Young was appointed assistant chief chemist of the Firestone Tire & Rubber Co., and later in the same year was promoted to the position of chief chemist, in this capacity having charge of the general and research laboratory, and all compounding work and factory control. Early in 1917 it was found necessary to enlarge the department, and a new set of laboratories was equipped to take care of the growing needs of the department which now has a staff of 45 well trained men.

Mr. Young passed examination for associateship of the Institute of Chemistry of Great Britain and Ireland in 1909 and was elected a Fellow of the Institute of Chemistry in 1914. He was elected a Fellow of the Chemical Society of London and a member of the Society of Chemical Industry in 1910. He is also a member of the American Chemical Society.

#### MID-WESTERN NOTES.

*By Our Regular Correspondent.*

THE PORTAGE RUBBER Co., Akron and Barberton, Ohio, has appointed the following new branch managers in the Middle West: Chicago—J. V. Wedgewood, succeeding J. W. Wildman, resigned; Minneapolis—W. R. McCarty, succeeding L. T. Ware, resigned; Detroit—S. R. Waller, succeeding L. T. MacGregor, resigned.

The Victor Rubber Co., Springfield, Ohio, has opened a branch at 1720 South Michigan avenue, Chicago, Illinois, with F. A. Richards as branch manager and George Hoff as office manager. Mr. Richards was formerly with the McGraw Tire & Rubber Co., Cleveland and East Palestine, Ohio, and Mr. Hoff comes from the Detroit office of the Victor company.

The Pennsylvania Rubber Co., Jeannette, Pennsylvania, has appointed Daniel McAvoy in charge of its branch at Omaha, Nebraska.

The Federal Rubber Co. of Illinois, Cudahy, Wisconsin, has appointed J. W. Culver, formerly district manager of the Boston Woven Hose & Rubber Co., as manager of its mechanical rubber goods division.

The Racine Rubber Co., Racine, Wisconsin, is building a four-story brick addition with basement, 175 by 80 feet. New equipment is being installed in the company's power house, including additional boilers and a low-pressure turbine with direct-connected generator. The cost of these improvements will be approximately \$500,000 and it is expected that the plant will be ready for full operation about the first of February. L. T. Vance is vice-president and general factory manager.

The Surety Tire & Rubber Co., St. Louis, Missouri, has increased its capitalization to \$1,500,000.

The International India Rubber Corp., South Bend, Indiana, is building an addition to its plant which will give it 4,000 extra square feet of floor space for storage purposes. A new factory building will also be erected at an early date.

Charles E. Miller, of the Anderson Rubber Works, Anderson, Indiana, is building additions to the plant to add about 40,000 square feet of floor space, making the total available floor space about 100,000 square feet when these improvements are completed. One building is 108 by 108 feet, with basement, and all are of concrete, steel, and brick construction. It is expected that the new buildings will be roofed in by the end of November and will be operating in the spring after the installation of new machinery for the manufacture of the company's tires and rubber-working machinery.

The B. F. Goodrich Rubber Co., Akron, Ohio, has appointed Frank S. Thrope local manager succeeding J. B. Olson at its store at South Bend, Indiana.

The Indiana Cord Tire Co. has removed from South Bend, Indiana, to Mishawaka, Indiana, the adjoining town. The company manufactures the "cord-inner-tire" composed of cord fabric with a breaker strip. R. W. Thomas is president and A. A. Peterson is treasurer and general manager.

The Palmer Tire & Rubber Co., St. Joseph, Michigan, manufacturer of Palmer safety cord tubes and Palmer molded tubes, contemplates the building of an addition to its factory next year so as to enable it to manufacture a tire by a process designed by its president, John E. Palmer.

The Canton-Blackstone Co., Youngstown, Ohio, has received authorization to do business in the State of Michigan with a capital stock of \$15,000. Arthur L. Irish is secretary.

W. P. Kastner, 2125 Michigan avenue, Chicago, Illinois, who makes a specialty of dealing in rims and rim parts for automobiles which have not been recently manufactured, has opened a branch at 1741 Woodward avenue, Detroit, Michigan, with N. J. Gender as manager. Standard equipment is also carried.

The Jaxon Steel Products Division of the General Motors Corp., Jackson, Michigan, manufacturer of automobile wheel rims, is enlarging its plant at an approximate cost of \$250,000, to include two one-story buildings, 100 by 460 feet, respectively, which will be completed at an early date.

#### SOUTHERN NOTES.

Jack Miller has been appointed special Texas representative of The Portage Tire & Rubber Co., Akron and Barberton, Ohio, with headquarters in Dallas, Texas.

The Hibbs Rubber Co., 200 South Boaz street, Fort Worth, Texas, has recently purchased a 20-acre site on the outskirts of the city, on which it will build a modern three-story factory building. This company has recently installed at Houston, Texas, a complete tire rebuilding plant equipped throughout with its own special machinery. It is also shipping this machinery into other states. C. D. Hibbs, the president, is the originator of the process and patentee of the machinery used in rebuilding tires by the Hibbs method.

The Firestone Tire & Rubber Co., Akron, Ohio, has appointed R. L. Benham manager at its branch at Houston, Texas. M. T. Smith, one of Firestone's city salesmen in San Antonio, has gone to Houston with Mr. Benham.

The Black & Decker Manufacturing Co., Baltimore, Maryland, has broken ground for a new and larger building, 100 by 200 feet, to be erected west of the present factory and connected with it. It will be of steel and brick construction to conform architecturally with the eight residences the company is building on Joppa Road, and will be finished like them in stucco. It is expected that the new unit will be completed by December 1 so that operation may begin soon after the first of next year. The company has already moved its general offices from 105 South Calvert street to Towson Heights, Baltimore.

The Kelly-Springfield Tire Co., New York City, has awarded the contract for its new plant at Cumberland, Maryland. This will cost approximately \$8,000,000 and will be ready for operation in May, 1920. The capacity will be 10,000 tires and 5,000 truck tires daily. The company's "Caterpillar" truck tire is meeting with great success.

The Portage Rubber Co., Akron and Barberton, Ohio, has promoted A. M. Fisher to the position of sales manager at its branch at Atlanta, Georgia, succeeding J. D. Pasho, resigned.

The Pennsylvania Rubber Co., East Jeannette, Pennsylvania, has opened a branch office at Charlotte, North Carolina, in charge of John D. Williamson, formerly North Carolina representative of the company.

#### THE RUBBER TRADE ON THE PACIFIC COAST.

*By Our Regular Correspondent.*

##### LOS ANGELES NOTES.

**A** SCOT PARK, the site of the new plant of the Goodyear Tire & Rubber Co. of California, at Los Angeles, is now the scene of great activity. Construction work is being rushed on a tire factory building 580 by 300 feet, of steel and brick, a warehouse 580 by 340 feet, and a cotton fabric mill 580 by 130 feet. The ultimate plans call for enlargement to four times the initial capacity.

The steel strike in the East has to some extent interfered with the construction of the California Goodyear plant, but the work is progressing as rapidly as possible under the circumstances, and the company expects to be able to use as many as 4,000 workmen by the first of March. Practically all the men who assist in building the plant will be given an opportunity to stay with the concern and to learn the tire-making business.

The Goodyear company at Akron, Ohio, has turned over to the California company its established business in the states of California, Oregon, Washington, Idaho, Montana, Utah, Nevada, Wyoming, Colorado, Arizona, New Mexico, and Hawaii. Until the completion of the Los Angeles plant, the Akron company will supply the California one at wholesale. A. F. Osterloh, secretary of the Akron company, has arrived in Los Angeles to assume the active management and succeeds Harry Chandler as vice-president of the California company. He is also vice-president and general manager of the Pacific Cotton Mills Co.

The Pennsylvania Rubber Co., Jeannette, Pennsylvania, has opened a branch office at Los Angeles. The manager in charge is Mr. Edelman, who was formerly with the company's branch at Omaha, Nebraska.

An active movement in support of the plan to make Los Angeles the cotton handling and shipping center of the Pacific coast is urged by the California Development Board. The board in its bulletin explains that the cotton production of the Southwest will reach approximately \$43,000,000 this year, which is considerably more than half the value of the citrus crop. This is urged as a reason why the United States Railroad Administration should grant the city rates designed to develop this new industry of Los Angeles. It is believed that making Los Angeles a con-

centration point will have the effect of greatly stimulating production, as there are many thousands of acres in the Southwest on which cotton can be grown successfully.

The first Southern California motor-truck tour, which ended in Los Angeles recently, proved to be a highly successful event. The caravan was a concrete demonstration to cities, towns and rural communities of the economy and reliability of the motor truck. Los Angeles tire dealers, automobile and business men are now talking of making it an annual event like the farm tractor demonstration. Thousands of persons in cities, towns and along the highways gathered to see the trucks go by and to get an idea of what the motor truck will mean to them in future transportation matters. The first section of the caravan included a motorcycle and side car for the train captain, a pilot car for the tour manager, and a scout truck entered by the Automobile Club of Southern California. Then came a giant motor fire engine followed by a line of 21 trucks of nearly as many makes, all carrying capacity loads, varying from hay to drug store supplies.

A new departure for tire companies is the establishment at various points by the Miller Tire Sales Co., of Los Angeles, of tire service stations for its customers.

The Planet Rubber Co., Los Angeles, has completed arrangements for the marketing of its new stock issue, the proceeds of which will be used for the enlargement of its plant.

#### SAN FRANCISCO NOTES.

The Pacific Rubber Co., in order to take care of its increased business, has opened a branch in San Francisco at 150 Mission street. P. H. Stortz, the company's sales manager in Los Angeles, who has an extensive business acquaintance throughout the state, has been given charge.

W. C. Fitzgerald, manager of the San Francisco branch of the Mohawk Rubber Co., has made arrangement with the National Tire & Rubber Co., of that city, to distribute its tires through Contra Costa and Alameda counties.

The Pacific Coast Rubber & Supply Co., Inc., 316 Mission street, San Francisco, is now controlled by the following officers, who hold all of its stock: Irvin Reed, president and manager; Henry D. Byrne, vice-president; Frank C. Stephens, secretary and treasurer. Mr. Reed was formerly Pacific Coast manager of the Republic Rubber Co., Youngstown, Ohio. Mr. Byrne was a member of the old firm, Squires & Byrne Rubber Co., Pacific Coast jobbers.

The Hewitt Rubber Co. of California, 1210 Claus Spreckels Building, San Francisco, is the Pacific Coast division of the Hewitt Rubber Co., Buffalo, New York, and is in charge of Charles W. Harris. This office also controls the company's business in Hawaii and the Philippines. Pacific Coast distributors have been appointed as follows: Howard & Litchfield, 700 Polk street, San Francisco; General Auto Supply Co., Broadway at Hobart street, Oakland, northern California; J. B. Wood Tire Co., 927 South Hill street, Los Angeles, southern California and Arizona; American Tire & Rubber Co., Broadway at Oak street, Portland, Oregon; Tomford Tire Co., 2115 Fourth street, Seattle, Washington.

Salesmen of the Samson Tire & Rubber Corporation, of Compton, California, in the Los Angeles district, held an enthusiastic meeting at the factory during the past month. A. Sleicher, president of the concern, gave a talk upon the technicalities of salesmanship, at the same time explaining the salient points of tire construction.

#### MISCELLANEOUS WESTERN NOTES.

The Kelly-Springfield Tire Co., New York City, has opened the following branches on the Pacific Coast: Bakersfield, California, J. E. Bradley; Fresno, California, W. A. Kidwell; Portland, Oregon, C. H. Mead; Seattle, Washington, H. M. Gagne.

The cotton crop of the Tucson, Arizona, section is expected to reach 800 bales this year, valued at about \$200,000. An exhibit of the local long staple will be displayed at New Orleans at the World Cotton Congress, under the direction of H. Lyon, managing editor of the "Tucson Citizen." Local growers are preparing to undertake a campaign to destroy the wild cotton plants near the cultivated cotton fields of the Santa Cruz Valley with funds contributed by the State Horticultural Board and the county of Pima. No particular danger from the boll weevil which infects these plants is feared, as the variety of the weevil is not the same as that which has done damage in the southern fields, but it is considered best to take proper precautions. It is thought that this species of weevil cannot live through the summer heat of Arizona.

The International India Rubber Corp., South Bend, Indiana, has appointed C. H. Mayer manager of its western district, including the states of California, Arizona, Utah, Nevada, Idaho, Oregon and Washington. Mr. Mayer was formerly with the United States Rubber Co. at San Francisco, Seattle, and Portland, and was its branch manager in the latter city for a number of years.

#### NORTHWESTERN NOTES.

The Northwestern Tire Corporation, with Jack Rosenstroh as president and manager, has opened quarters at 444 Stark street, Portland, Oregon, for the distribution of the Keystone, National, Speedway and Batavia tires. The Northwestern Tire Corporation is one of 145 similar stores in the principal cities of the United States from one coast to the other. It will do both a wholesale and retail tire business.

Frazar & Co., New York City, manufacturers of chemicals for the rubber trade, have opened an office at Seattle, Washington, to facilitate Pacific Coast exports and imports.

#### CANADIAN NOTES.

*By Our Regular Correspondent.*

THE CANADIAN CONSOLIDATED RUBBER Co., Limited, Montreal, Quebec, has made the following changes in its officers and directorate: directors—Sir Charles G. Gordon succeeds R. C. Colt, Lieutenant-Colonel Herbert Molson, M. C., succeeds Ernest Hopkinson, and W. Binmore succeeds Hugo Wellein. J. G. Barrows has been made an assistant treasurer and Walter Binmore has assumed the duties of treasurer in addition to those of secretary of the company.

The Ames Holden Tire Co., Limited, a subsidiary of Ames-Holden-McCready, Limited, Montreal, Quebec, has nearly completed its new plant at Kitchener, Ontario, including a main building 400 by 90 feet, two stories in height, and a power house, machine shop, laboratory, office, and cement house.

The new plant of the Mount Royal Rubber Co., 1399 Messier street, Montreal, Quebec, is shortly to be completed and machinery is due to arrive this month. Talmon H. Rieder is president of the company.

The Montreal Waterproof and Clothing Co., Montreal, Quebec, has increased its capital from \$99,000 to \$198,000.

W. A. Black, vice-president and general manager of the Ogilvie Co., Montreal, Quebec, has been elected a director of Ames-Holden-McCready, Limited, of the same city.

Ames-Holden-McCready, Limited, Montreal, Quebec, has opened branches in Regina and Saskatoon, of which L. T. McGiverin will have charge.

The Columbus Rubber Co. of Montreal, Limited, Montreal, Quebec, has established a complete line of rubber footwear at its warehouse at 41 Princess street, Winnipeg, Manitoba. G. W. Barrett is manager. G. H. Connolly is manager of the company's branch warehouse at 709 Second street, west, Calgary, Alberta.



## The Rubber Trade in Great Britain.

*By Our Regular Correspondent.*

**T**HE ACTIVITIES of the Rubber Growers' Association in the way of finding new outlets for the use of rubber can hardly be considered superfluous in view of the fact that despite the general European demand the stocks in England are larger than at any previous period. It has been difficult to find storage room for all the rubber arriving, and Liverpool and Manchester stores are being utilized, in addition to the London headquarters. The fact that ships have had to wait as long as four weeks at Liverpool to discharge has not troubled the rubber manufacturer, though it has proved annoying to associated interests. Fine hard Pará at 2s. 6d. per pound continues to show an increase of 7d. per pound when washed, over its plantation rival, and the fact remains that this premium continues much the same as was the case ten years ago despite all the efforts that have been made by plantation interests to show that there is no solid grounds for the belief in its superiority.

### RATES OF EXCHANGE.

A main topic of discussion with regard to foreign business is the rates of exchange, the present position of affairs not having been generally foreseen. Although the European countries are in the worst position, the state of affairs is not favorable to American exporters. At the time of writing a conference called by the United States Chamber of Commerce is discussing in New York the proposed standardization of rates of exchange, and a leading part in the conference is being played by Marshall Stevens, M. P., chairman of the Xylos Rubber Co., Limited, Trafford Park, Manchester.

### TRADE CONDITIONS.

Trade generally is brisk, nearly all departments of the rubber industry reporting themselves busy. At the same time competition is keen and more goods of inferior quality are being made than has been the case during the last few years. The prevailing labor unrest is responsible for a matter which is proving of considerable annoyance to those dealers placing large contracts. I refer to the clause now general in contract that prices may be raised before delivery. The clause is generally as follows: "Our price is based on the present rates of labor and material and is subject to our confirmation on receipt of order. Should any increase come into effect before completion of the order our contract price to be increased accordingly." The buyer in some cases may be excused for an uncomfortable feeling that the "accordingly" may prove to be somewhat excessive as he has no means of checking the calculations. Still if these terms are not complied with there is but little chance of the business maturing. The proofing trade keeps busy and difficulty has been experienced in obtaining a sufficient number of hands. Owing to the high price of other outer coats and umbrellas the waterproof is being more generally worn than used to be the case, though it is a poor substitute for a great coat. One does not naturally see much of rubber and fiber soles for boots, but I was told by a manufacturer specializing in this material that he was bombarded with orders. An article for which there is a great demand at present on the Continent, particularly in France, is card clothing for cotton mills. The mills have to be set going again and the British supplies of card clothing are not bothered with the new French import tax on rubber goods as they sell by special arrangement to a department of the French Government which is financing the mills.

### WOMEN IN RUBBER MILLS.

As stated in THE INDIA RUBBER WORLD of September 1, 1919, it certainly seems to be the fact that women workers in the rubber industry—I refer especially to those taken on during the war—

are less seriously affected by the peace than was thought would be the case. In recent visits to rubber factories I have noticed women still at work on the rolls, wet mixing mills, spreading machines, etc., work which was formerly done exclusively by men. It would appear that where an old hand does not claim his job the woman is allowed to go on.

### LEYLAND & BIRMINGHAM RUBBER CO., LIMITED.

At the annual meeting of the Leyland & Birmingham Rubber Co., Limited, held in September, with R. T. Byrne in the chair, a dividend of 15 per cent was declared out of the disposable balance of £83,936; £10,000 was put to reserve, making it £75,000, and £46,543 was carried forward against last year's £28,933. In discussing the state of affairs at the various works at Leyland, Glasgow, Pierton and Mitcham, and at the foreign branch depots, the chairman spoke seriously on the labor position. After mentioning the considerable advances in wages and the system adopted of a bonus on output, he regretted to say that in common with many other industries in the country, they had suffered by the pernicious and suicidal policy of limitation of output which was still being pursued in many directions. He did not mind 47 hours or high wages, but he did ask for production and in a great many departments they were not getting it by a long way. It was seriously to be hoped that the operatives would realize the inevitable result of that disastrous policy before home and foreign trade was more seriously affected.

At an extraordinary general meeting a resolution was passed authorizing alteration of the articles of association so as to enable the directors to increase the capital of the company in view of the suggested capitalization of the reserves.

### A NEW AMALGAMATION.

The United Rubber Producers, Limited, has been formed with a capital of £250,000, to acquire works for the production of rubber goods for the cycle, motor and allied trades. One works already acquired is the New Turco Rubber Co., Limited, of Clayton, Manchester, and another one is being negotiated for as a going concern. The Turco company is sole owners of two processes for the manufacture of rubber, which are expected to cause something of a revolution in the industry. The rebuilding of tires is to form a prominent part of the new company's business, this being a branch of the trade not hitherto taken up in England, though I understand it is well developed in America. It is stated that the rebuilt tire can be retailed at about one-third of the price of a new tire. In this connection I may remark that the government tires which were offered to reclaimers as scrap rubber had been purposely cut through. Whether this was to prevent them being rebuilt I cannot say. Rubber sponges are also to be an important article manufactured, Louis Alexander, the chairman of the new company, having been closely related with Mr. Leeson, formerly of the New Turco company, in the formation, a few years ago, of the Sorbo Rubber Sponge Products, Limited, whose works are near London.

### COHEN & WILKS EXONERATED.

The name of this Manchester firm of waterproofers was adversely referred to in a recent report of the Parliamentary Committee inquiring into alleged defections in the Women's Royal Air Force. A Court of the Air Force was subsequently appointed to inquire into this and various other aspersions and the result of their findings is that Messrs. Cohen & Wilks and Mr. Cohen, a member of the firm, are completely exonerated from charges in connection with contracts for coats

and skirts, made by Miss O'Sullivan, assistant commandant and clothing controller of the force. The main charge was that the garments were cut on the bias, but the court found that only the sample coat was thus cut, the deliveries not being cut in that way after the lady had complained to Mr. Cohen. It was not found that the contract negated this form of cutting by which only a few inches of cloth per garment would have been saved. The result of the charges generally was that no one, either inspectors, officers or contractors, was really to blame for anything which had occurred, a somewhat common result when departments hold their own courts of inquiry.

#### LONDON BUSES.

A rubber authority has expressed the opinion that in less than two years all London buses will be running on pneumatic tires.

#### PROPOSED BRITISH ROAD TAXES INCLUDE TIRES.

Suggestions for keeping British roads in repair by the taxation of vehicles, are made in the "Financial Times," as neither the Government nor the local rates provide sufficient money for the purpose. It is proposed to tax automobiles according to weight on a progressive scale, so that a car weighing a ton would pay ten guineas or about fifty dollars and a car weighing a ton and a half would pay 465 shillings or about \$116. The proceeds would be devoted wholly to keeping the roads in order. It also is proposed to tax pleasure cars in proportion to the dust they raise and to impose extra taxes on tires that cut up the road. English makers might thus be driven to manufacture lighter cars which could compete with the American makes in the colonies and the foreign markets.

#### AN ASSOCIATION OF JAPANESE CRUDE RUBBER MERCHANTS.

The leading crude rubber merchants of Osaka and Kobe, Japan, have organized the Osaka and Kobe Crude Rubber Merchants' Association with headquarters at the offices of Y. Miyagawa & Co., the standing manager, in Kobe. The other managers are Otomune Shoten, Limited, and the Yuasa Trading Co., Limited, both of Osaka, the Masuda Trading Co., Limited, and Mitsui Bussan Kaisha, both of Kobe. The latter firm will act as accountant's supervisor. The by-laws of the association prescribe the procedure in all the transactions and disputes of members.

Other Kobe members include the Ito-Cho Shoten, Imaeda Ryutaro Shoten, Oyawa Shokai, Limited, Ogura Sutejiro Shoten, Kawanishi Zembei Shoten, Kato Shokai, Takahashi Brothe Shokai, Tshura Hilcojiro Shoten, Naigai Boyalci Kaisha, Limited, Nanyo Yashi Kaisha, Limited, Kuhara Shoji Kaisha, Limited, Miyazahi Tatsujiro Shoten and Sugimura Sataro Shoten.

The other Osaka members are Higashi-Indo Trading Co., Limited, Kawahara Girolsu Shoten, Furusawa Shoji Kaisha, Limited, Mitsui Bussan Kaisha and Gomei Kaisha.

#### FRENCH RUBBER STATISTICS.

Crude rubber was imported into France in 1918 to the extent of 18,957 tons—a decrease of 3,644 tons as compared with the preceding year; 197 tons came from the United States and 12,910 from Great Britain. The importations of manufactured rubber declined from 7,070 tons in 1917 to 6,526 in 1918. The United States furnished 2,863 tons of manufactured rubber in 1918 as compared with 2,705 tons in 1917; while imports for these two years from Great Britain were 3,138 tons and 4,146 tons, respectively.

In the past six months of 1919, France imported 39,588,664 pounds of crude and reclaimed rubber, value \$29,907,400, the official figures quoted by "Le Caoutchouc et la Gutta Percha." Of this 1,899,924 pounds came from French West Africa, 601,194 pounds from Senegal, 548,504 pounds from the French Congo;

England contributed 15,782,070 pounds, the British East Indies 10,185,354 pounds, Brazil 4,687,861 pounds, and other countries 5,882,755 pounds.

The imports of January-June, 1918, were 21,787,655 pounds, valued \$16,080,000, and in 1917, 29,159,142 pounds, valued \$19,697,000. The value of the manufactured rubber goods imported was \$25,374,400 in the first six months of 1919, \$11,078,800 in the same months of 1918, and \$14,962,000 in 1917.

The exports of crude and reclaimed rubber, January-June, 1919, were valued \$4,886,400; in 1918 they were 4,471,812 pounds and in 1917 7,678,022 pounds. Manufactured goods to the amount of \$15,112,400 were exported January-June, 1919.

#### DR. ANDRE DUBOSC, C. E.

THE LIKENESS here shown is that of the noted French chemist, André Dubosc, editor in chief of our valued contemporary, *Le Caoutchouc et la Gutta Percha*.



DR. ANDRÉ DUBOSC.

M. Dubosc's name stands high in the investigation and chemistry or rubber, and his books are standard in the literature of the rubber industry. His work, in collaboration with Dr. A. Luttin-gier, "Le Caoutchouc; Sa Chimie Nouvelle; Ses Syntheses," published in Paris in 1914, and in English later in this country, shows deep research and is a valuable contribution on the subject. Equally valuable is his "Les Cholestérols, au Point de Vue Scientifique et Industriel."

M. Dubosc is a tireless investigator, and a prolific writer, particularly on rubber chemistry. Among his studies and conclusions may be mentioned the recommendation of the use of formic acid, in place of sulphuric acid in reclaiming; the discovery of a new process for separating pure rubber from combined sulphur in reclaimings; a method of determining the amount of uncombined rubber in reclaimed vulcanized rubber; an investigation of the treating of crude jelutong with acetone and ether; a study of the various methods of analysis of the sulphides of antimony; of the influence of hypophosphites on colored crepe rubber; a review of catalysis and its application to vulcanization; essays on rubber substitutes, etc. Many of these were prepared for and published in THE INDIA RUBBER WORLD. His briefs of the work of contemporary scientists, as published in his own journal, show a complete grasp of the subjects, much research and keen observation.

M. Dubosc visited the United States in 1915-1916, and one result of his inspection and investigation here was the instituting in Paris of a course in chemistry applied to rubber, similar to those in this country, in England and in Germany, the classes being held in his laboratory in Paris.

#### FRENCH TESTS OF PNEUMATIC AND SOLID TIRES.

AN IMPORTANT PARIS TRANSPORTATION COMPANY HAS 100 TRUCKS of 2½ tons capacity running on dual pneumatics and is convinced that, for a 2½-ton load the pneumatic tire is superior to the solid because of its lower cost of maintenance and the greater tonnage transported by reason of the higher average speed. The experience of this firm is that with six-inch dual tires on the rear and the same size single on the front, the average tire life is 7,500 miles on the front wheels and 5,000 miles on the rear. There is reason to believe that if these trucks had been

designed originally for use with pneumatic tires the mileage would have been higher.

Tests to ascertain the comparative advantages of solid and pneumatic tires for trucks were made by the Michelin company in France, using a pair of 2½-ton trucks worked side by side, one of these trucks being on solid tires and the other on six-inch dual pneumatics. These tests lasted five months during which time the solid-tired truck ran 6,523 miles and the pneumatic-tired truck, 9,631 miles. The tests were brought to a close when the solid-tired truck became unfit for further service, a rear wheel being broken and the steering pivots very badly worn. The increased mileage, by reason of the higher average speed of the pneumatic-tired truck and the absence of visits to the repair shop amounted to about 50 per cent.

The following advantages in favor of pneumatics were noted as the outcome of these tests:

1. Lower cost of repairs and maintenance.
2. Increased tonnage transported by reason of the higher average speed.
3. Lower physical effort for the driver.
4. Better performance on snow or on heavy clay roads.
5. Truck less dependent on road surface.

Tire makers are not all certain that the pneumatic tire competes with the solid for heavy haulage, certain ones holding to the opinion that each type of tire has its distinct field. In France the opinion is growing that modern large-size pneumatics can compete with solids and such tire equipment is being offered for useful loads of 2 to 3½ tons.

It is maintained that the 10 and 12-inch tire does not give any better riding qualities than a couple of six-inch, while it has the disadvantages of very high cost, great weight, and difficulty of fitting.

In France only the soft-bead tire is known and some of the difficulties of mounting would disappear with the use of the straight-side tire. In France, too, the value of the detachable steel disk wheel has been thoroughly established by the severe tests of war service. ("Automotive Industries.")

## THE RECONSTRUCTION OF GERMANY'S RUBBER INDUSTRY.

### HAMBURG AS A RUBBER MARKET.

HAMBURG as a world market for middle grade rubber is a thing of the past. The fact must be faced that only comparatively small quantities of "wild" rubber, with the exception of the Pará qualities, will be collected and shipped to Europe. The experience of Liverpool, which was an important market for this kind of rubber, has been, during the war, that the drop in the price of rubber to about 50 cents a pound for the best plantation grades has killed what interest the producers had in collecting wild rubber so that they have turned their attention to other raw materials.

This will naturally affect Hamburg also, which will find besides in Amsterdam a new rival for the world rubber trade in addition to her former competitors, Antwerp and London, which have the advantage not only of dealing with their own colonies but of controlling abundant free capital in the hands of enterprising traders. The output of the Dutch East Indies plantations, which are owned almost exclusively in Holland, amounting to over 50,000 tons a year, will be shipped for the most part to Amsterdam or will at any rate be marketed there.

It will take all the enterprise, the combined effort and perfect organization of Hamburg business men to contend against the influence of the foreign markets and secure for Hamburg independence in trading and in the direct importation of plantation rubber to supply the needs of the German rubber industry.

### GERMAN TRADE NOTES.

German Government control of industries keeps on. Small dealers in waste and reclaimed rubber are ordered, by a decree

issued May 13, 1919, to turn over whatever stock they gather to twenty-two specified firms in Frankfurt am Main, Hanover, Berlin, Hamburg, Dresden, Leipzig, Köln, Minden, Breslau and Lübeck.

The German Government has sanctioned importation of foreign motor tires, under license; unlicensed importations will be confiscated. The "Gummi-Zeitung" criticises the measure sharply; it sees no reason for hurrying automobile business before German manufacturers are able to procure rubber and to have their chance to compete. The Continental Caoutchouc & Guttapercha Co. has published a protest against the sanction.

A "Protective Association of Inventors" has been formed in Berlin, which asks a government subvention to further its objects, which are to see that German inventors are protected in their patent rights, which have suffered much from irregularities of all kinds during the war, and also to further the use of German inventions wherever they are likely to serve German interests and the reconstruction of German industries.

### HOLLAND'S RUBBER MANUFACTURING INDUSTRY GROWS.

When the war broke out in 1914 the principal manufacturers of rubber goods in Holland were, Hevea at Hoogezand, Pompe at Amsterdam, Hollandsche Draad & Kabelfabriek, also at Amsterdam, Gebr. Merens at Haarlem, St. Joris, better known as Bakker, at Ridderkerk and Vredestein at Loosduinen. Many of these extended their operations during the war and the first two amalgamated with some other firms in the N. V. Vereenigde Nederlandsche Rubber Fabrieken, which has erected very large works at Doorwerth near Oosterbeek. Many new firms have gone into the manufacture of rubber articles, so that in the first months of 1919 there were 29 factories, large and small, in Holland where crude rubber was turned into finished articles.

The closing of the ports created a great demand for tires of all descriptions; rubber insulated wire, which had before been mostly imported, was made by the Hollandsche Draht & Kabelfabriek; the making of ebonite wares for the electro-technical industries was developed. The war introduced into Holland the cold vulcanizing process and the manufacture of surgical gloves and fingers, supplies, tobacco pouches, balloons, dentists' supplies, valve tubing, waterproof sheeting, erasers and so on. The little pilot balloons used by the Royal Meteorological Institute, which used to be imported, are now home made and a beginning attempted in the manufacture of tennis balls.

### ALUMINUM LATEX CUPS.

That latex cups made of aluminum are in use on rubber plantations is well known and not particularly interesting. But the fact that they are made in the United States and by the hundred thousands is another matter and worthy of more than passing notice.



NESTING TAPPING CUPS.

The cup shown here is an American product made from a straight sheet of pure aluminum, No. 25 B. & S. gage, and goes through six operations before the cup assumes its final shape. The cups are finally cleaned in an acid bath

and dried in hot sawdust. The fact that they nest is a convenience, not only in shipping but on the plantation as well. (American Metal Works, 4865 Stenton avenue, Philadelphia, Pennsylvania.)



## Recent Patents Relating to Rubber.

### THE UNITED STATES.

ISSUED SEPTEMBER 2, 1919.

- N**O. 1,314,650. Tire valve. E. E. Holt, assignor to Holt Auto Devices Co.—both of Chicago, Ill.
- 1,314,670. Hard rubber pipe reinforced with metal embedded in it and encased in soft rubber. W. H. Juve and H. A. Hoffman, Akron, O., assignors to The B. F. Goodrich Co., New York City.
- 1,314,764. Resilient tire. G. Stever, Akron, O.
- 1,314,799. Garment protector. G. K. Guinzburg, assignor to I. B. Kleinert Rubber Co.—Both of New York City.
- 1,314,819. Telephone set for dictograph. C. H. Lehman, assignor by mesne assignments to Dictograph Products Corp.—both of New York City.
- 1,314,930. Casing for pneumatic tire. E. K. Baker, assignor by mesne assignment to himself and C. G. Hawley—both of Chicago, Ill.
- 1,314,932. Demountable rim for tires. E. K. Baker, assignor to Universal Rim Co.—both of Chicago, Ill.
- 1,314,933. Demountable rim for tires. E. K. Baker, assignor to Universal Rim Co.—both of Chicago, Ill.
- 1,314,934. Demountable rim for tires. E. K. Baker, assignor to Universal Rim Co.—both of Chicago, Ill.
- 1,314,935. Demountable rim for tires. E. K. Baker, assignor to Universal Rim Co.—both of Chicago, Ill.
- 1,314,936. Demountable rim for tires. E. K. Baker, assignor to Universal Rim Co.—both of Chicago, Ill.
- 1,314,937. Demountable rim for tires. E. K. Baker, assignor to Universal Rim Co.—both of Chicago, Ill.
- 1,314,938. Transplit demountable rim for tires. E. K. Baker, assignor to Universal Rim Co.—both of Chicago, Ill.
- 1,314,997. Resilient shoe with rubber heel. G. J. Winter and C. S. Diebolt—both of Buffalo, N. Y.
- 1,315,001. Resilient tire. W. Ashcroft, Garson Quarry, Manitoba, Can.
- 1,315,043. Resilient automobile wheel. W. Seidel, Chicago, Ill.
- 1,315,062. Cushion tire. W. E. Walker, Cottage Grove, Ore. (Renewed January 23, 1919.)
- 1,315,091. Resilient automobile wheel. W. G. Chipley, Omaha, Neb.
- 1,315,092. Tread and felloe construction for wheels. W. G. Chipley, Omaha, Neb.
- 1,315,136. Pneumatic tire. P. S. Lietz, Chicago, Ill.
- 1,315,164. Syringe. O. O. R. Schwidetzky, Hasbrouck Heights, assignor to Becton Dickinson & Co., Rutherford—both in N. J.
- 1,315,173. Automatic pressure relief valve for pneumatic tires. L. M. Wampler, Liberal, Kans.
- 1,315,178. Combination of pneumatic tire and inwardly channeled wheel rim, etc. G. G. Buckland, San Francisco, Calif.
- 1,315,184. Fastening means for demountable rims. J. C. Fuller, Seward, N. J.

ISSUED SEPTEMBER 9, 1919.

- 1,315,199. Demountable rim for tires. A. J. Anderson, Binford, N. D.
- 1,315,267. Aquatic device. M. C. White, Los Angeles, Calif.
- 1,315,286. Divisible wheel for automobiles. W. Brown, Peterborough, Eng.
- 1,315,292. Pneumatic-tire tread. T. Dunn, London, Eng.
- 1,315,471. Tire. H. Dalwigk, San Antonio, Tex.
- 1,315,482. Non-slip tread for shoes, with solid rubber margin and interior of sponge rubber.
- 1,315,515. Gas mask. C. W. Kohler and F. H. Martin, Akron, O., assignors to The B. F. Goodrich Co., New York City.
- 1,315,573. Hose supporter. C. C. Peterson, Washington, D. C.
- 1,315,598. Armored pneumatic tire. F. Fisher, Ironton, Mo.
- 1,315,626. Resilient tire. W. Gerwien, San Francisco, Calif.
- 1,315,683. Rubber heel. J. H. Overton, Trenton, N. J.
- 1,315,778. Dust cap for tire valve. H. P. Kraft, Ridgewood, N. J.
- 1,315,837. Resilient tire. C. E. Hopkins, Washington, D. C.

ISSUED SEPTEMBER 13, 1919.

- 1,315,955. Valve for inflating toy balloons, etc. H. R. Gill, Ashland, O.
- 1,315,995. Tire valve. L. H. Shoup and E. H. Webb, Montrose, Colo.
- 1,316,072. Milking machine with rubber teat cups. C. O. Anderson, Springfield, Ill.
- 1,316,186. Resilient tire. G. J. Rheuban, assignor of  $\frac{1}{2}$  to I. J. Tatrow—both of Youngstown, O.
- 1,316,340. Suction apparatus for surgical use. A. H. Tuttle, Cambridge, Mass.
- 1,316,364. Raincoat. F. W. Howard, New York City.
- 1,316,423. Pneumatic arch support. R. S. Carling, Los Angeles, Calif.
- 1,316,469. Combined pneumatic mattress and garment. R. Werner, San Francisco, Calif.
- 1,316,501. Elastic non-inflatable rubber tire. C. A. Morrison, Delaware, O.

ISSUED SEPTEMBER 23, 1919.

- 1,316,562. Rubber-soled shoe and method of manufacture. J. A. Dunphy, Groton, Mass., assignor by mesne assignments to United Shoe Machinery Corp., Paterson, N. J.
- 1,316,594. Tire casing. S. C. Rand, Chicago, Ill.
- 1,316,605. Tire rim. J. H. Wagenhorst, Akron, O.
- 1,316,686. Pneumatic tire. J. C. Chapman, New York City.
- 1,316,766. Pneumatic tire with clincher rim, etc. J. T. Clark, Provo, Utah.
- 1,316,773. Tire and method of forming. Delille Daigre, Levallois-Perret, France.
- 1,316,978. Reinforced pneumatic tire. J. F. Robinson, Minneapolis, Minn.
- 1,317,010. Combined solid and pneumatic tire. A. F. Fairchild, Delavan, Wis.
- 1,317,102. Hot-water bag. M. L. Reid, San Francisco, Calif.
- 1,317,140. Collapsible box for shipping purposes. E. Lenke, Cuyahoga Falls, assignor to F. T. Lahey, Akron—both in Ohio.

ISSUED SEPTEMBER 30, 1919.

- 1,317,161. Shoe with combined insole, arch support, ventilator, etc. J. T. Hay, Lackawanna, N. Y.
- 1,317,185. Tread for pneumatic tires. R. W. Twombly, Freeport, Tex.

- 1,317,223. Cigarette and cigar case with elastic band for retaining contents in place. F. S. Russell, Glasgow, Scotland.
- 1,317,235. Pneumatic mattress. C. H. Stonebridge, New York City.
- 1,317,305. Inflatable knee-pad. U. C. Miller, Waurika, Okla.
- 1,317,326. Hose clamp. H. B. Sherman, Battle Creek, Mich.
- 1,317,472. Fountain pen. F. M. Ashley, Brooklyn, N. Y., assignor by mesne assignments to the Wahl Co., Wilmington, Del.
- 1,317,478. Split rim for tires. W. N. Booth, assignor to Kelsey Wheel Co., Inc.—both of Detroit, Mich.
- 1,317,571. Smoker's pouch. F. Goertz, Newark, N. J., assignor to The Scoban Co., Inc., New York City.
- 1,317,585. Solid rubber tire. C. Macbeth and H. C. Young, Birmingham, assignors to The Dunlop Rubber Co., Limited, Westminster, London—both in England.
- 1,317,615. Tire abrader. F. N. Cordell, St. Louis, Mo.

### THE DOMINION OF CANADA.

ISSUED SEPTEMBER 9, 1919.

- 192,509. Garter. T. D. Anagnostopoulos, Eunice, La., U. S. A.
- 192,553. Fountain pen. J. Hillinger, Chicago, Ill., U. S. A.
- 192,595. Tire tread. J. W. Taylor, Kellogg, Ida., U. S. A.
- 192,624. Pneumatic valve. The Double Seal Tire Valve Co., Detroit, Mich., assignee of W. P. Porter, Bronx, N. Y.—both in the U. S. A.

ISSUED SEPTEMBER 16, 1919.

- 192,673. Garment supporter. W. D. Corder, Phillippi, W. Va., U. S. A.
- 192,701. Pneumatic tire. E. J. Kreis, Mendota, Ill., U. S. A.
- 192,708. Shoulder braces. A. Malcolmson, Moorefield, Ont.
- 192,734. Hot-water bag. M. L. Reid, San Francisco, Calif., U. S. A.
- 192,737. Tire valve. M. C. Schweinert, West Hoboken, N. J., U. S. A.
- 192,798. Valve for tires. T. A. Lowe, Renfrew, assignee of W. Goodwin, Peterborough—both in Ontario.

ISSUED SEPTEMBER 23, 1919.

- 192,812. Rim for pneumatic tires. P. G. Beremand, Bay City, Mich., U. S. A.
- 192,821. Demountable rim for tires. G. W. Clements, Detroit, Mich., U. S. A.
- 192,829. Auxiliary rim for tires in combination with wheel and main rim. C. G. Evans, Sault Ste. Marie, Ont.
- 192,832. Respirator. L. Farr, El Portal, Calif., U. S. A.
- 192,865. Bottle closure. J. G. Newman, North Sydney, N. S. W., Australia.
- 192,874. Waterproof garment with ventilated seam. C. B. Shane, Chicago, Ill., U. S. A.
- 192,878. Reinforcing boot for tires. E. M. Steell, Spokane, Wash., U. S. A.
- 192,898. Collapsible rim for tires. The Baer Collapsible Rim Corp., assignee of C. H. Baer—both of San Francisco, Calif., U. S. A.
- 192,903. Patch for balloons. The Goodyear Tire & Rubber Co., assignee of H. T. Kraft—both of Akron, O., U. S. A.
- 192,914. Transversely split demountable rim. The Universal Rim Co., assignee of E. K. Baker—both of Chicago, Ill.

ISSUED SEPTEMBER 30, 1919.

- 192,936. Tire abrader. F. N. Cordell, St. Louis, Mo., U. S. A.
- 192,999. Ear drum. W. L. Stewart, Trenton, N. J., U. S. A.
- 193,000. Resilient tire. E. J. Taylor, Edmonton, Alta.
- 193,016. Tire patch. The Durkee-Atwood Co., assignee of H. C. Atwood—both of Minneapolis, Minn., U. S. A.

### THE UNITED KINGDOM.

ISSUED SEPTEMBER 3, 1919.

- 129,029. Shock-absorbing device for airplanes, with rubber springs. Sideley-Deasy Motor Car Co. and F. M. Green, Parkside, Coventry.
- 129,048. Rubber face-pad for field glasses, etc. E. T. P. Goodyear, Colley Corner, Reigate Heath, Surrey.
- 129,115. Fountain pen. E. C. R. Marks, 57 Lincoln's Inn Fields, London. (Conklin Pen Manufacturing Co., Toledo, O., U. S. A.)
- 129,141. Hollow rubber ring for expanding piston packing-ring in double-acting pump for liquids, air, etc. H. Hewins, The Elms, Grimsby, Lincolnshire.
- 129,159. Surgical douche apparatus. T. H. McNamara, 1146 Mission street, San Francisco, Calif., U. S. A.
- 129,195. Tire patch. W. C. Wood, 74 Western avenue, Minneapolis, Minn., U. S. A.
- 129,233. Latex spout. Sir J. Anderson, 5 Whittington avenue, Leadenhall street, London.

ISSUED SEPTEMBER 10, 1919.

- 129,416. Parachute, case, and damp-proof lining. F. C. Mears, West Africa House, Kingsway, London.
- 129,428. Rectal support. J. McIntyre, 128 Beach street, Jersey City, N. J., U. S. A.
- 129,592. Arch support with rubber pad. Orthopedists, Limited, King's Cross Road, London.
- 129,597. Valve for tires. C. J. Faurbye, Skjern, and S. Alstrup, Aarhus—both in Denmark.

ISSUED SEPTEMBER 17, 1919.

- 129,744. Tire valve. J. N. Newsom, 2714 La Salle street, St. Louis, Mo., U. S. A.
- 129,756. Rubber heel lift recessed for inserting metal plate. I. Henne, 957 Kent avenue, Brooklyn, N. Y., U. S. A.
- 129,783. Self-sealing pneumatic tire, etc. C. A. Cleghorn, Brackenside, Woburn Sands, Bedfordshire.
- 129,852. Resilient tire with core of cork sections, etc. A. E. Williams, 30 East Parade, Rhyl, Denbighshire.
- 129,914. Metal plate to protect rubber heels when being applied. F. A. Nolan, 216 New York Life Building, St. Paul, Minn., U. S. A.

- 129,917. Foot-arch support. T. Coffey, 901 South Mabel street, Tulsa, Okla.  
129,965. Life-saving garment. D. Del Re, Iron River, Mich., U. S. A. (Not yet accepted.)

ISSUED SEPTEMBER 24, 1919.

- 130,147. Artificial feet with rubber cushions to restrain ankle movement. W. H. Tresidder, trading as W. R. Grossmith, 12 Burleigh street, Strand, London.  
130,280. Boot sole with top and bottom layers of wood and one or more intermediate layers of rubber, canvas, etc. V. Buckland, 68 Windmill Road, West Croydon, Surrey.  
130,282. Rubber band stamp with means for adjusting tension and dismantling. F. Pitman, Bulla-Harre, Campbell street, East Kew, Victoria, Australia.  
130,306. Stethoscope. J. D. Pollard, 2755 West Jackson Boulevard, Chicago, Ill., U. S. A.  
130,331. Demountable rim for tires. B. Tamburello, New York City, U. S. A. (Not yet accepted.)  
don, near Southampton, (Not yet accepted.)

THE FRENCH REPUBLIC.

PATENTS ISSUED, WITH DATES OF APPLICATION.

- 491,067. (July 29, 1918.) Holder for cup and dripping spout in tapping. Kapocwas Rubber Co.  
491,113. (February 3, 1915.) Elastic insulated fender as lining for bullet-proof cuirasses. A. Delille-Daigre, G. de St. Marc, and S. de Szepezyński.  
491,373. (July 6, 1918.) Pneumatic valve. Holt Auto Devices Co.  
492,168. (October 5, 1918.) Improvements in leggings. Mme. E. Charlet, née B. F. Bergougnan.  
492,311. (May 17, 1918.) Respiratory apparatus for use in rarified atmospheres. A. F. S. Kent.  
492,330. (October 16, 1918.) Hose coupling. J. B. Gagné.  
492,350. (September 28, 1918.) Resilient tire for vehicle wheels. J. A. Allaire.  
492,394. (October 18, 1918.) Improvements in rubber heels. B. W. Brockett.  
492,418. (September 28, 1916.) Apparatus for walking on the water. E. Y. Gong, U. S. A.  
492,421. (October 6, 1916.) Floating apparatus for walking on the water. P. Géné.  
492,438. (October 22, 1918.) Life-saving suit. J. E. Lepage.  
492,603. (October 28, 1918.) Sectional casing for pneumatic tires. Société Anonyme Berendek's Syndicat voor Banden en Deelen.  
492,605. (October 30, 1918.) Non-skidding tire casing. E. Héritier, 96 rue d'Annonay, Saint-Etienne (Loire).  
492,614. (October 1, 1915.) Gas Mask. G. R. Delattre.  
492,643. (October 30, 1918.) Improvements in hollow bodies made of rubberized cord fabric, and their process of manufacture. T. Sloper.  
492,771. (December 24, 1915.) Gas mask permitting prolonged stay in unbreathable atmospheres. J. Tissot.  
492,863. (August 27, 1918.) Tire improvements. Morand Bros. and Martin Cushion Wheel Co., Chicago, Ill., U. S. A.  
492,844. Life-saving vest. Mme. Beaumont, née O. Newman.  
20,859/483,349. (May 16, 1918.) First certificate of addition to patent dated November 4, 1916, for improvements in stylographic and other fountain pens. D. Cameron.

TRADE MARKS.

THE UNITED STATES.

- N<sup>O</sup>. 112,581. The word LIBERTY above representation of statue of Liberty on horizontal rectangle beside vertical rectangle—rubber tire patch. Liberty Patch Co., Oklahoma, Okla.  
113,078. The word AUTOGRAPH—fountain pens. Charles R. Keeran, Chicago, Ill.  
114,256. The initials R & L enclosed in a rectangle—rubber overshoes. Rosman & Laveson, Philadelphia, Pa.  
115,189. The word SAFEPACK—sheets of paper or paper and textile combined, plain or treated by coating or impregnation to be waterproof, for use in wrapping tires, etc. Safepack Mills, Boston, Mass.  
115,744. Conventional combination of the words VICTORY TIRES so arranged that the letter T serves in both words while the ends of its cross-piece are formed into the letters V and Y—pneumatic tires and inner tubes. Victory Tire & Rubber Co., New York City.  
116,048. The word TIRELESS—pneumatic and solid tires. Demas Armor-Cased Tire Saving Co., Inc., Pittsburgh, Pa.  
116,200. The word LILY—dress shields. Brooklyn Shield & Rubber Co., Brooklyn, N. Y.  
116,353. The word SAWACO—fountain pens, erasers, etc. Samuel Ward Manufacturing Co., Boston, Mass.  
117,499. The letters O and Y connected by representation of a scroll bearing the word OILSKIN—rubber and balata belting, etc. Olmsted-Flint Co., Cambridge, Mass.  
117,634. The word ARMORCORD—inner tubes. Armorcord Rubber Co., Morgantown, W. Va., and Washington, D. C.  
117,733. The word MAYFLOWER—rubber heels and soles. Mayflower Rubber Works Co., Braintree, Mass.  
117,916. The words WA-CO-FAB—waterproof dressing for textile fabrics, etc. Baker-Overton Co., Dallas, Tex.  
118,040. The word EXCELSIOR—belting, hose and packing. Boston Belting Corp., Boston, Mass.  
118,413. The word VULCALUN—treads and panels for stairways, floors, etc., composed of broken masses of hard mineral matter embedded in and on matrices of vulcanized rubber. American Abrasive Metals Co., New York City.  
118,554. Representation of a cross within a triple circle and the word HANES arranged within the cross vertically and horizontally so that the letter N serves in both words—tires and inner tubes. Hanes Rubber Co., Winston-Salem, N. C.  
118,730. The words UNION HEART separated by representation of two hearts, one superimposed on the other—tires and inner tubes. Marius Greenspan, Chicago, Ill.

- 118,762. The word "MIDCO" quoted—tires and tubes. The Mid-Continent Tire Manufacturing Co., Wichita, Kans.  
118,879. The word FLEXO—laminated rubber and leather belts for motor vehicles. Detroit Leather Works, Detroit, Mich.  
118,898. The word USCO—rubber pump-valves. United States Rubber Co., New Brunswick, N. J., and New York City.  
119,818. Representation of the shaft and dart of an arrow separated by the word VULCAN just above them—rubber offset-blankets. Vulcan Proofing Co., Brooklyn, N. Y.  
119,206. The word OMO—hospital sheeting of waterproof treated fabric. The Omo Manufacturing Co., Middletown, Conn.  
119,207. The word OMO having a pair of wings spreading upward from the top points of the letter M—hospital sheeting made of waterproof treated fabric. The Omo Manufacturing Co., Middletown, Conn.  
120,242. The words WHOLE-SOLE—fabric coverings for rubber tires. George W. Eno Rubber Co., Los Angeles, Calif.  
120,492. The initials O. K. D.—golf balls. Harry C. Lee & Co., New York City.

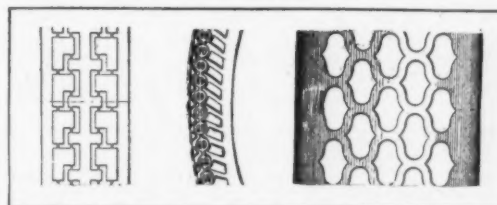
THE DOMINION OF CANADA.

- 24,866. The word VETERAN—rubber tires, footwear, hose, belting, and water bags. John M. Percy, Toronto, Ont.  
24,879. Representation of label bearing words DICK'S PACKING and representation of two hands holding a twisted rope—packing and hose of all kinds. W. F. and J. A. Dick trading as Dick's Asbestos Co., 47 Fenchurch street, London, Eng.  
24,882. The words CANADIAN BEAUTY and representation of a rose—rubber packing rings, jar rings, hose, and tires. Dunlop Tire & Rubber Goods Co., Limited, Toronto, Ont.  
24,884. Representation of two crossed snowshoes and a sunken shield—rubber boots, shoes, overshoes, and other footwear composed wholly or partly of rubber or rubber compositions. Canadian Consolidated Rubber Co., Limited, Montreal, Que.  
24,290. The words FAULTLESS CHIPS—chewing gum. The Faultless Chemical Co., Baltimore, Md., U. S. A.  
24,897. The word "IRIS" and a representation of the flower iris—elastic webs, sandalings, and cords, and rubber threads, cloths, and dress shields. Faïre Bros. & Co., Limited, 2 Southampton street and St. George's Mills, Leicester, Eng.  
24,898. The word "LILY" and a representation of a lily—elastic webs and cords. Faïre Bros. & Co., Limited, 2 Southampton street and St. George's Mills, Leicester, Eng.  
24,899. The words "THE ROSE" and the representation of a rose—elastic webs and cords. Faïre Bros. & Co., Limited, 2 Southampton street and St. George's Mills, Leicester, Eng.  
24,900. The word "VIOLET" and the representation of a violet—elastic webs, sandalings, and cords, rubber threads, cloths, and dress shields. Faïre Bros. & Co., Limited, 2 Southampton street and St. George's Mills, Leicester, Eng.  
24,901. The word "PANSY" and the representation of a pansy—elastic webs, sandalings and cords, rubber threads, cloths, and dress shields. Faïre Bros. & Co., Limited, 2 Southampton street and St. George's Mills, Leicester, Eng.  
24,902. The word "SNOWDROP" and the representation of a snowdrop—elastic webs, sandalings, and cords, rubber threads, cloths, and dress shields. Faïre Bros. & Co., Limited, 2 Southampton street and St. George's Mills, Leicester, Eng.  
24,939. The words "MOUNTAIN GOAT TIRES WITH GOAT HOOF TREADS"—automobile tires. Frank W. Bull, Oshawa, Ont.  
24,986. The word "TRIANGLE" within an equilateral triangle—rubber boots, shoes, overshoes, and other footwear composed wholly of rubber or rubber compositions. Canadian Consolidated Rubber Co., Limited, Montreal, Que.  
25,081. The words "THREAD RUBBER" between two concentric circles and the letter W inside the inner circle—storage batteries and parts. Willard Storage Battery Co., Cleveland, O., U. S. A.  
25,087. The word "IBEX"—tires. Frank Wesley Bull, Oshawa, Ont.  
25,102. The word "SLICES"—chewing gum, etc. Charles W. Pike, San Francisco, Calif., U. S. A.  
25,122. The word "MADERITE"—tennis balls, water bottles, fountain and combination syringes, face and ice bags. United Drug Co., Limited, Toronto, Ont.  
25,127. The word "SYMBOL"—druggists' sundries. United Drug Co., Limited, Toronto, Ont.  
25,128. The word "REPUTATION"—druggists' sundries. United Drug Co., Limited, Toronto, Ont.  
25,168. The word "REDDCOM"—rubber-lined cotton hose, etc. F. Reddaway & Co., Limited, Victoria Mills, Cheltenham street, Pendleton, Manchester, Lancaster County, Eng.

DESIGNS.

THE UNITED STATES.

- N<sup>O</sup>. 53,843. Tire. Patented September 16, 1919. Term 14 years. Walter R. Denman, Cleveland, O.  
53,855. Tire. Patented September 16, 1919. Term 7 years. E. L. McKimm, assignor to Premier Tire & Rubber Co.—both of Kansas City, Mo.  
53,858. Tire or tire casing. Patented September 16, 1919. Term 14 years. Arthur E. Pearce, Ashtabula, O.



53,858

53,855

53,845

## Review of the Crude Rubber Market.

### NEW YORK.

THROUGHOUT OCTOBER the rubber market has been very firm, with a steady and improving demand from the factories that has raised the price of plantation rubbers both here and abroad. The fluctuations in prices have been within narrow limits. At the close of the month prices were being strongly maintained. The Brazil market has been practically dead, the increase of production keeps the price down; it has become so unimportant that dealers take little interest in it. The market for guayule and balata has also been quiet. Prices for plantation and for South American rubber at the beginning and toward the close of the month are shown in the following quotations:

**PLANTATION HEVEA.** September 27, first latex crêpe, spot 50-51½ cents, October-December 50¼ cents, January-March 51 cents, January-June 51-51½ cents, July-December, 1920, 52 cents, October 24, spot 53 cents, futures 53 cents, July-December, 1920, 53½ cents.

September 27, ribbed smoked sheet 49½ cents, October-December 49¾ cents, January-March 50 cents, January-June 50 cents, July-December, 1920, 51 cents, October 24, spot 52 cents, futures 52 cents, July-December, 1920, 52½ cents.

September 27, No. 1 amber crêpe, spot 47 cents, October 24, spot 49-50 cents.

September 27, clear thin brown crêpe, spot 46 cents, October 24, spot 44-46 cents.

September 27, No. 1 roll brown crêpe, spot 36½ cents, October 24, spot 40-41 cents.

**SOUTH AMERICAN PARA AND CAUCHO.** Spot prices: September 27, upriver fine 54 cents, islands fine 47 cents, upriver coarse 33¾ cents, islands coarse 21½ cents, Cametá coarse 22 cents, caucho ball 33¾ cents. October 24, spot prices practically unchanged.

### NEW YORK QUOTATIONS.

Following are the New York spot quotations, for one year ago, one month ago and on October 25, the current date:

	November 1, 1918, Free Rubber.	October 1, 1919.	October 25, 1919.
<b>PLANTATION HEVEA—</b>			
First latex crêpe.....	59 @	49½ @	53 @
Amber crêpe No. 1.....	56 @	46½ @	49 @
Amber crêpe No. 2.....	55 @	45½ @	48 @
Amber crêpe No. 3.....	54 @	44½ @	47 @
Amber crêpe No. 4.....	53 @	43½ @	46 @
Brown crêpe, thick and thin clean.....	53 @ 55	44½ @	44 @
Brown crêpe, thin specky...	44 @	42½ @	41½ @
Brown crêpe, rolled.....	36 @	37 @	40½ @
Smoked sheet, ribbed, stand- ard quality.....	57 @	48½ @	52 @
Smoked sheets, plain, stand- ard quality.....	54 @	45 @	49 @
Unsmoked sheet, standard quality.....	50 @	42 @	47 @
Colombo scrap No. 1.....	40 @	38 @	35 @
Colombo scrap No. 2.....	38 @	36 @	34 @
<b>EAST INDIAN—</b>			
Assam crêpe.....	@	None	48 @
Assam onions.....	@	None	@
Penang block scrap.....	@	None	@
<b>PONTIANAK—</b>			
Banjerminasin.....	@	12 @	11 @ 12
Palembang.....	@	None	12¾ @
Pressed block.....	@	24 @	22½ @
Sarawak.....	@	None	69¾ @
<b>SOUTH AMERICAN—</b>			
<b>PARAS—</b>			
Upriver fine.....	62 @	54½ @	52½ @ 53
Upriver medium.....	56 @	52 @	50 @
Upriver coarse.....	37 @	33 @	34½ @
Upriver weak, fine.....	@	41 @	41 @
Islands, fine.....	@	47½ @	47½ @ 48

November 1,  
1918,  
Free Rubber.

October 1,  
1919.

October 25,  
1919.

Islands, medium.....	@	45 @	45 @
Islands, coarse.....	@	22 @	21½ @
Cametá, coarse.....	@	22½ @	23 @
Madeira, fine.....	@	56 @	53½ @
Acre Bolivian, fine.....	@	55 @ 55½	53½ @
Peruvian fine.....	@	52 @	51 @
Tapajos fine.....	@	53 @	50 @
<b>CAUCHO—</b>			
Lower caucho ball.....	@	31½ @	31 @
Upper caucho ball.....	37 @	33 @	35½ @
<b>MANICOBAS—</b>			
Ceara negro heads.....	@	38 @	40 @
Ceara scrap.....	@	28 @	30 @
Manicoba (30% guarantee)	@	35 @	37 @
Mangabeira thin sheet....	@	38 @	40 @
<b>CENTRALS—</b>			
Corinto scrap.....	38 @	33 @	34 @ 34½
Esmeralda sausage.....	38 @	32 @	34 @ 34½
Central scrap.....	38 @	32 @	34 @ 34½
Central scrap and strip...	36½ @	29 @ 30	30 @
Central wet sheet.....	27 @	23 @	24 @ 24½
Guayule (20% shrinkage)...	@	24 @	27 @
Guayule, dry.....	35 @	35 @	36 @
<b>AFRICANS—</b>			
Niger flake, prime.....	28 @	@	18 @
Benguela, extra No. 1, 28%	@	@	@
Benguela No. 2, 32½%...	@	25½ @	26½ @
Congo prime, black upper...	@	39 @	@
Congo prime, red upper...	@	@	@
Rio Nunez ball.....	@	@	@
Rio Nunez sheets and strings	@	@	@
Conakry niggers.....	@	@	@
Massai sheets and strings..	@	@	@
<b>GUTTA PERCHA—</b>			
Gutta Siak.....	28 @	25 @	23 @ 25
Red Macassar.....	@	None	2.60 @ 2.75
<b>BALATA—</b>			
Block, Ciudad, Bolivar....	71 @	76 @	57 @ 60
Colombia.....	60 @	56 @	48 @ 50
Panama.....	58 @	45 @	40 @ 45
Surinam sheet.....	95 @	@	84 @ 85
amber.....	97 @	@	87 @ 88

### RECLAIMED RUBBER.

The reclaimed rubber market has shown marked improvement the past month. Boot and shoe reclaims have been in strong demand due to activity in the carriage cloth, automobile topping and insulated wire trades. There has been slight improvement also in the call for tire reclaims by the mechanical goods trade. Prices remain unchanged from last month's quotations.

### NEW YORK QUOTATIONS.

OCTOBER 25, 1919.

Subject to change without notice.

Standard reclaims:

Floating.....lb.	.30 @	.35
Friction.....lb.	.25 @	.35
Mechanical.....lb.	.11 @	.16
Red.....lb.	.20 @	.25
Shoe.....lb.	.15 @	.15¾
Tires, auto.....lb.	.15 @	.16¾
truck.....lb.	.11½ @	.12¾
White.....lb.	.22 @	.25

### THE MARKET FOR COMMERCIAL PAPER.

In regard to the financial situation, Albert B. Beers, broker in crude rubber and commercial paper, No. 68 William street, New York City, advises as follows:

"During October there has been a fair demand for paper, mostly from out-of-town banks, and the best rubber names have been taken at 5½ to 5¾ per cent, and those not so well known 6 to 6½ per cent."

### ANTWERP RUBBER MARKET.

GRISAR & CO., Antwerp, report [October 31, 1919]: The market has continued firm during the past week although the demand has quieted down somewhat. The stock in Antwerp was 2,234 tons. Business in futures was a little quieter; 132,500 kilograms were registered. Prices at closing ranged from 9.45 to 9.55 francs.



## SINGAPORE WEEKLY RUBBER REPORT.

GUTHRIE & CO., LIMITED, Singapore, report [September 14, 1919]: Influenced partly by advices of higher values in London, the rubber auctions which opened on Wednesday showed further advances in prices. At the commencement fine pale crêpe realized up to 85½ cents per pound (three lots sold at 86 cents), showing an advance on the week of 3½ cents. Ribbed smoked sheet was in good demand at 84/85 cents (three lots realized 85½ cents), which figure is 6 cents up on the week. On the second day the tone of the market was distinctly easier and closing prices may be given as 84½ cents for crêpe and 83½ for sheets. Lower grades were in good demand at 2¼/4¼ cents advance on last week. The quantity cataloged was 1,035 tons, of which 948 tons were offered and 728 tons sold.

The following is the course of values:

	In Singapore, per Pound. <sup>1</sup>	Sterling Equivalent per Pound in London.
Sheet, fine ribbed smoked .....	83c @ 85c	2/ 2 @ 2/ 2½
Sheet, good ribbed smoked .....	74 @ 83	1/11½ @ 2/ 2
Crêpe, fine pale .....	83½ @ 85½	2/ 2¾ @ 2/ 2¾
Crêpe, good pale .....	75 @ 83	2/ 0 @ 2/ 2½

<sup>1</sup>Quoted in S. S. Currency —\$1 = \$0.567.

## AMSTERDAM MARKET REPORT.

JOOSTEN & JANSSEN, Amsterdam, report [October 24, 1919]: During the past week the rubber market was very animated. Several parcels spot and afloat, c.i.f. Amsterdam, changed hands and also a part of the new arrivals, originally destined for subscription sale, were sold privately, on a basis of about f. l. 38-l. 42½ for Hevea standard quality. On the terminal market, too, some contracts were closed for November and March delivery at f. l. 39 and for delivery in August at f. l. 38½.

## BATAVIA RUBBER MARKET.

HERMANS, MARSMAN & CO., Batavia, report [July 15-August 15, 1919]: The market opened with a very weak tendency and prices decreased to \$456 for fine pale crêpe and \$448 for prime smoked sheets. In the beginning of this month prices improved a little on account of more demand from the United States. Speculators are paying good prices for October-December delivery, but only little is offered for this forward delivery. The market closed with the following quotations:

	In Batavia Per ½-kilo. <sup>1</sup>	Equivalent Per ½-kilo in U. S. Currency.
Fine pale crêpe .....	1.20	\$0.480
First pale crêpe .....	1.15	0.460
Prime smoked sheets .....	1.17	0.468
Fine pale crêpe basis 75 per cent. ....	1.12	0.448

<sup>1</sup>Quoted per ½-kilo (1.1 lb.) in Dutch Indian guilders (\$0.40).

## CEYLON RUBBER IMPORTS AND EXPORTS.

## IMPORTS.

	January 1 to September 8.
	1918. 1919.
Crude rubber:	
From Straits Settlements .....	1,523,919 1,680,728
India .....	2,158,976 953,551
Burma and other countries .....	3,107 .....
Totals .....	3,686,002 2,634,279

## EXPORTS.

	1918. 1919.
Crude rubber:	
To United Kingdom .....	12,664,651 19,944,621
Belgium .....	29,120 .....
France .....	470,207 330,010
Victoria .....	513,119 98,755
New South Wales .....	294,787 154,212
United States .....	12,685,166 41,048,225
Canada and Newfoundland .....	5,124,498 260,026
India .....	2,329 2,313
Straits Settlements .....	454 .....
Japan .....	206,058 186,626
Totals .....	31,915,815 62,054,362

## STRAITS SETTLEMENTS RUBBER EXPORTS.

An official report from Singapore states that the export of rubber from Straits Settlements ports in the month of August amounted to 8,933 tons (of which 1,286 tons were transshipments), which compares with 7,818 tons in July, and 1,249 tons in the corresponding month last year. The total for eight months of the present year is 99,476 tons, compared with 45,407 tons in 1918 and 50,653 tons in 1917. Comparative statistics follow:

	1917. 1918. 1919.
January .....	3,562 4,302 14,404
February .....	6,495 2,334 15,661
March .....	8,299 8,858 20,908
April .....	6,103 6,584 10,848
May .....	6,282 13,587 15,845
June .....	8,775 6,515 5,059
July .....	7,351 1,978 7,818
August .....	3,786 1,249 8,933
Totals .....	50,653 45,407 99,476

## FEDERATED MALAY STATES RUBBER EXPORTS.

An official report from Kuala Lumpur states that the Federated Malay States exported 10,626 tons of plantation rubber in the month of August, as against 8,640 tons in July and 5,291 tons in the corresponding month last year. The total export for eight months amounted to 69,983 tons, compared with 51,554 tons for the corresponding period in 1918 and 51,761 tons in 1917. Appended are the comparative statistics:

	1917. 1918. 1919.
January .....	5,995 7,588 7,163
February .....	7,250 6,820 10,809
March .....	7,088 7,709 10,679
April .....	5,955 7,428 7,664
May .....	7,179 5,851 7,308
June .....	6,009 5,161 7,094
July .....	5,798 5,706 8,640
August .....	6,487 5,291 10,626
Totals .....	51,761 51,554 69,983

## PLANTATION RUBBER EXPORTS FROM THE FAR EAST.

Six Months Ended June 30, 1919.

	Singapore.	Penang.	Port Swettenham.	Malacca.	Totals.
To Great Britain .....	32,832,534	14,634,119	21,203,154	1,415,462	70,085,269
United States .....	8,328,267	.....	.....	.....	8,328,267
New York .....	88,225,331	4,701,789	1,432,649	.....	94,359,769
Pacific Ports .....	56,928,397	3,360,713	108,549	.....	60,397,659
Japan .....	9,388,133	275,147	.....	.....	9,663,280
Canada .....	2,199,467	179,283	28,000	.....	2,406,750
South America .....	64,933	.....	.....	.....	64,933
Colombo .....	198,534	204,625	890,974	.....	1,294,133
Australian Ports .....	212,667	.....	.....	.....	212,667
Totals ..	198,378,263	23,355,676	23,663,326	1,415,462	246,812,727

(Compiled by R. F. Bradford, Penang, Straits Settlements.)

## PLANTATION RUBBER EXPORTS FROM JAVA.

	July.	Six Months Ended July 31.
	1918. 1919.	1918. 1919.
To Holland .....	236,000 .....	415,000 .....
England .....	790,000 .....	4,605,000 .....
United States .....	389,000 458,000	4,551,000 10,564,000
Canada .....	841,000 123,000	36,000 .....
Singapore .....	7,000 .....	3,086,000 .....
Japan .....	.....	179,000 .....
Australia .....	.....	169,000 .....
Other countries .....	.....	510,000 12,000
Totals .....	1,237,000 1,607,000	12,568,000 19,066,000
Ports of origin:		
Tandjong Priok .....	806,000 968,000	6,212,000 10,116,000
Semarang .....	10,000 57,000	115,000 317,000
Soerabaya .....	419,000 582,000	5,776,000 8,069,000
Tjilatjap .....	.....	149,000 .....
Totals .....	1,235,000 1,607,000	12,103,000 18,651,000

## EXPORTS OF INDIA RUBBER FROM MANAOS DURING THE MONTH OF AUGUST, 1919.

	NEW YORK.					EUROPE.					GRAND TOTALS.
EXPORTERS.	Fine.	Medium.	Coarse.	Cauch.	TOTALS.	Fine.	Medium.	Coarse.	Cauch.	TOTALS.	
Tancred, Porto & Co. ....	382,349	33,665	107,098	235,888	759,000	94,093	37,910	.....	17,997	150,000	909,000
T. A. Mendes & Co. ....	194,093	32,148	132,428	315,919	645,588	58,310	.....	.....	.....	58,310	732,898
Stowell & Co. ....	111,898	90,768	62,745	53,581	318,992	93,523	1,889	6,663	106	102,181	421,173
General Rubber Co. of Brazil .....	112,755	9,191	63,761	109,293	295,000	55,903	3,308	789	.....	60,000	355,000
Y. G. Araujo .....	.....	.....	.....	.....	.....	95,040	2,560	2,550	.....	100,150	100,150
Adelbert H. Alden, Limited. ....	3,400	3,276	16,863	5	23,544	50,045	.....	46	22,648	72,739	96,283
A. Souza & Co. ....	14,921	728	2,046	64,592	82,287	.....	.....	.....	.....	.....	82,287
Ohliger & Co. ....	30,666	16,800	988	10,086	58,540	.....	.....	.....	.....	.....	58,540
Simfronio & Co. ....	31,732	381	2,508	6,147	40,768	.....	.....	.....	.....	.....	40,768
Chase Import & Export Corp. ....	14,884	9,264	4,459	2,800	31,407	.....	.....	.....	.....	.....	31,407
C. Zencovich .....	.....	.....	.....	.....	.....	24,840	1,823	1,564	147	28,383	28,383
Francisco Salles Vieira .....	7,128	.....	2,062	10,158	19,348	1,050	.....	.....	.....	1,050	20,398
Moraes, Carneiro Co. ....	13,181	1,101	4,463	1,250	19,995	.....	.....	.....	.....	.....	19,995
Higson & Fall .....	.....	.....	.....	14,570	14,570	.....	.....	.....	.....	.....	14,570
R. Lévy & Co. ....	10,443	637	1,580	.....	12,660	.....	.....	.....	.....	.....	12,660
M. Corbacho & Co. ....	2,885	320	212	.....	3,417	.....	.....	.....	.....	.....	3,417
Total, Manaos .....	930,335	198,279	401,213	824,289	2,354,116	472,813	47,490	11,612	40,898	572,813	2,926,929
In transit, Iquitos. ....	196	17,566	969	3,082	21,813	5,153	6,382	1,388	64,017	76,940	98,753
Totals .....	930,531	215,845	402,182	827,371	2,375,929	477,966	53,872	13,000	104,915	649,753	3,025,682

(Compiled by Stowell & Co., Manaoas, Brazil.)

# CRUDE RUBBER ARRIVALS AT ATLANTIC AND PACIFIC PORTS AS STATED BY SHIPS' MANIFESTS.

## PARAS AND CAUCHO AT NEW YORK.

	Pounds.								
	Fine.	Medium.	Coarse.	Cauchó.	Mixed.				
					Rubber.				
SEPTEMBER 18. By the S. S. <i>Holbein</i> , from Pará.					***4,500	335,200			
H. A. Astlett & Co.	\$150,500		\$53,200	\$127,000					
G. Amsinck & Co., Inc.					***20	6,113			
Poel & Kelly	\$93,062	\$1,066	\$1,952	\$105,085	1,300	202,465			
Various			7	212	607	437,805			
SEPTEMBER 23. By the S. S. <i>Marpesia</i> , from Buenos Aires.					44	12,980			
Various									
SEPTEMBER 29. By the S. S. <i>Bivan</i> , from Pará and Manáos.						520,500			
General Rubber Co.	1,513	33	43			287,800			
H. A. Astlett & Co.	\$172,800		\$41,000	\$74,000		23,430			
Raw Products Co.	71					57,703			
Poel & Kelly	\$54,137	\$2,350	\$1,216			288,400			
Meyer & Brown, Inc.	\$281,400			\$7,000		64,530			
G. Amsinck & Co., Inc.						922,770			
Wigmore	72	101	31			477,372			
Paul Bertuch	\$2,759								
Various	\$950	24	215	304	2				
Various									
OCTOBER 2. By the S. S. <i>Mayaro</i> , from Ciudad Bolívar.									
South & Central America Commercial Co.	\$158					18,810			
OCTOBER 3. By the S. S. <i>Carmania</i> , at New York.						\$159,808			
Poel & Kelly									
OCTOBER 5. By the S. S. <i>General O. H. Ernst</i> , from Cristobal.						20,645			
G. Amsinck & Co., Inc.	\$300		\$33						
OCTOBER 7. By the S. S. <i>Rivers</i> , from Montevideo.									
Neuss, Hesslein & Co.	154**					6,721			
Everett Heany					\$417	181,395			
Various					\$198	86,130			
OCTOBER 14. By the S. S. <i>Belgic</i> , from Liverpool.					607	156,501			
Poel & Kelly									
OCTOBER 15. By the S. S. <i>Tewnyson</i> , from Pará.									
F. R. Henderson & Co.	\$9,920	\$6,720	\$6,720	***4,480	27,840				
H. A. Astlett & Co.	\$39,500		\$8,400	***14,000	61,900				
G. Amsinck & Co., Inc.	\$119,967	\$3,390	\$9,367	\$2,092	64,816				
Raw Products Co.	256				89,600				
Wm. Schall & Co.	\$341,600		\$28,560	\$531,560	901,720				
Poel & Kelly	\$62,900	\$2,900	\$3,100	\$1,700	***1,300	71,500			
Various	\$1,440			3,640	5,080				
OCTOBER 19. By the S. S. <i>Bronte</i> , from Buenos Aires.					6,683	3,414,768			
Various									

\*Including skins. †Pounds, including medium. ‡Pounds. §Bales. ¶Bags and packages. \*\*Packages, including cauchó. †Bundles. \*\*\*Pounds, ca-metá. ¶Including extra fine and coarse.

## PLANTATIONS.

(Figured 180 pounds net to the bale or case.)

	Shipment from:	Shipped to:	Pounds.	Totals.
SEPTEMBER 10. By the S. S. <i>Monteagle</i> , at Vancouver.				
F. R. Henderson & Co.	Hongkong	Seattle	205,100	
Federal Export Corp.	Hongkong	New York	69,940	276,040
SEPTEMBER 16. By the S. S. <i>Colusa</i> , at San Francisco.				
The B. F. Goodrich Co.	Singapore	San Fran'co	1,291,320	
The B. F. Goodrich Co.	Penang	Akron, Ohio	297,900	
Firestone Tire & Rubber Co.	Singapore	Akron, Ohio	534,780	
Firestone Tire & Rubber Co.	Penang	Akron, Ohio	163,000	
Poel & Kelly	Singapore	San Francisco	181,660	
Pacific Trading Corp. of America	Penang	New York	133,020	
Various	Singapore	New York	45,900	2,517,580
SEPTEMBER 19. By the S. S. <i>Teyama Maru</i> , at New York.				
William H. Stiles & Co.	Singapore	New York	30,960	
L. Littlejohn & Co., Inc.	Singapore	New York	302,400	
Poel & Kelly	Singapore	New York	50,400	
Jaeger & Co.	Singapore	New York	45,900	
Gaston, Williams & Wigmore	Singapore	New York	43,100	
E. S. Kuh & Valk Co.	Singapore	New York	33,660	
Fred Stern & Co.	Singapore	New York	20,160	
Various	Singapore	New York	202,500	729,080
SEPTEMBER 19. By the S. S. <i>Abron</i> , at New York.				
Chas. T. Wilson Co., Inc.	Colombo	New York	65,700	
The Goodyear Tire & Rubber Co.	Colombo	Akron, Ohio	323,563	
L. Littlejohn & Co., Inc.	Colombo	New York	251,820	
Meyer & Brown, Inc.	Colombo	New York	216,000	
Poel & Kelly	Colombo	New York	182,520	
C. C. Trevanion & Co.	Colombo	New York	79,200	1,118,803
SEPTEMBER 19. By the S. S. <i>Empress of Japan</i> , at Vancouver.				
Firestone Tire & Rubber Co.	Hongkong	Akron, Ohio	282,600	
SEPTEMBER 22. By the S. S. <i>Empress of Russia</i> , at Vancouver.				
Firestone Tire & Rubber Co.	Hongkong	Akron, Ohio	161,960	
The Fisk Rubber Co.	Hongkong	Chicopee Falls	96,300	
F. R. Henderson & Co.	Singapore	New York	184,000	443,260

	Shipment from:	Shipped to:	Pounds.	Totals.
SEPTEMBER 22. By the S. S. <i>Ploeric</i> , at New York.				
Meyer & Brown, Inc.	Colombo	New York	67,200	
Poel & Kelly	Colombo	New York	46,177	
Littlejohn & Co., Inc.	Singapore	New York	28,000	
W. R. Grace & Co.	Colombo	New York	35,280	
Various	Colombo	New York	63,440	240,097
SEPTEMBER 22. By the S. S. <i>Wachusett</i> , at New York.				
F. R. Henderson & Co.	Singapore	New York	231,840	
William H. Stiles & Co.	Singapore	New York	79,200	
J. T. Johnstone & Co., Inc.	Soerabaya	New York	11,500	
L. Littlejohn & Co., Inc.	Singapore	New York	784,000	
L. Littlejohn & Co., Inc.	Soerabaya	New York	208,260	
The Goodyear Tire & Rubber Co.	Singapore	Akron, Ohio	201,600	
The Goodyear Tire & Rubber Co.	Batavia	Akron, Ohio	109,800	
United Malaysian Rubber Co., Ltd.	Singapore	New York	94,320	
Jaeger & Co., Ltd.	Singapore	New York	91,980	
Rutger & Blecker.	Singapore	New York	78,580	
Fred Stern & Co.	Batavia	New York	84,600	
Winter, Ross & Co.	Singapore	New York	72,000	
Winter, Ross & Co.	Soerabaya	New York	33,840	
Peninsular Trading Agency	Soerabaya	New York	17,280	2,098,800
SEPTEMBER 22. By the S. S. <i>Valencia</i> , at New York.				
T. D. Downing & Co.	London	New York	466,380	
Poel & Kelly	London	New York	9,453	
Various	London	New York	642,420	1,118,253
SEPTEMBER 24. By the S. S. <i>Port Bowen</i> , at New York.				
The Goodyear Tire & Rubber Co.	Liverpool	Akron	51,480	
Poel & Kelly	Liverpool	New York	45,139	
Curry, McPhillips & Co.	Liverpool	New York	2,522	99,141
SEPTEMBER 24. By the S. S. <i>Kentucky</i> , at New York.				
L. Littlejohn & Co., Inc.	Colombo	New York	58,000	
Poel & Kelly	Colombo	New York	38,321	96,321
SEPTEMBER 25. By the S. S. <i>Michigan</i> , at New York.				
T. D. Downing & Co.	London	New York	54,540	
Various	London	New York	470,160	524,700
SEPTEMBER 25. By the S. S. <i>Lapland</i> , at New York.				
Various	Southampton	New York	149,080	149,080
SEPTEMBER 26. By the S. S. <i>Marengo</i> , at New York.				
Curry, McPhillips & Co.	Hull	New York	59,580	59,580
SEPTEMBER 26. By the S. S. <i>Triumph</i> , at New York.				
F. R. Henderson & Co.	London	New York	56,000	
Various	London	New York	45,880	101,880
SEPTEMBER 26. By the S. S. <i>Persia Maru</i> , at San Francisco.				
F. R. Henderson & Co.	Hongkong	New York	485,928	
Firestone Tire & Rubber Co.	Hongkong	Akron	61,740	547,668
SEPTEMBER 27. By the S. S. <i>Kashima Maru</i> , at Seattle.				
Rubber Trading Co.	Singapore	Seattle	159,040	
Geo. S. Bush & Co., Inc.	Singapore	New York	80,100	
Geo. S. Bush & Co., Inc.	Singapore	Akron	44,640	
Various			415,880	699,660

1 Ex. Nippon Yusen Kaisha S. S. *Kashima Maru*, from Yokohama.

SEPTEMBER 27. By the S. S. <i>Oneka</i> , at New York.				
Meyer & Brown, Inc.	Colombo	New York	60,000	
Poel & Kelly	Hongkong	New York	30,126	
L. Littlejohn & Co., Inc.	Colombo	New York	22,900	113,026
SEPTEMBER 28. By the S. S. <i>City of Lahore</i> , at New York.				
L. Littlejohn & Co., Inc.	Colombo	New York	100,800	
Poel & Kelly	Colombo	New York	27,215	128,015
SEPTEMBER 29. By the S. S. <i>Nagano Maru</i> , at New York.				
Poel & Kelly	Colombo	New York	234,970	
Meyer & Brown, Inc.	Colombo	New York	162,000	
Fred Stern & Co.	Colombo	New York	89,800	
Chas. T. Wilson Co., Inc.	Colombo	New York	44,640	
Various	Colombo	New York	18,360	549,770
SEPTEMBER 30. By the S. S. <i>Baltic</i> , at New York.				
Aldens' Successors, Ltd.	Liverpool	New York	47,433	47,433
OCTOBER 1. By the S. S. <i>Tyndarens</i> , at Vancouver.				
Fred Stern & Co.	Singapore	Seattle	104,400	
Poel & Kelly	Singapore	Vancouver	33,600	138,000
OCTOBER 1. By the S. S. <i>Mezaba</i> , at New York.				
Robinson & Co.	London	New York	46,980	
Meyer & Brown	London	New York	44,800	91,780
OCTOBER 1. By the S. S. <i>Western Cross</i> , at New York.				
F. R. Henderson & Co.	Batavia	New York	1,090,008	
The B. F. Goodrich Co.	Batavia	Akron, Ohio	364,140	
Firestone Tire & Rubber Co.	Batavia	Akron, Ohio	144,720	
J. T. Johnstone & Co.	Batavia	New York	125,500	
Aldens' Successors, Inc.	Soerabaya	New York	55,562	
William H. Stiles & Co.	Batavia	New York	30,940	
Manhattan Rubber Mfg. Co.	Soerabaya	New York	27,000	
L. Littlejohn & Co., Inc.	Soerabaya	New York	896,000	
Winter, Ross & Co.	Soerabaya	New York	402,840	
Winter, Ross & Co.	Batavia	New York	346,140	
Chas. T. Wilson Co., Inc.	Batavia	New York	16,800	
The Goodyear Tire & Rubber Co.	Batavia	New York	356,400	
Fred Stern & Co.	Batavia	New York	245,543	
Poel & Kelly	Batavia	New York	141,660	
Poel & Kelly	Soerabaya	New York	84,780	
Mitsui & Co., Ltd.	Batavia	New York	90,000	

(S. S. Western Cross—Continued.	Shipment from:	Shipped to:	Pounds.	Totals.	Shipment from:	Shipped to:	Pounds.	Totals.
Edward Maurer Co., Inc.	Batavia	New York	86,220		OCTOBER 7. By the S. S. Firestone Tire & Rubber Co.	Singapore	Akron	780,840
Kidder, Peabody & Co.	Soerabaya	New York	82,800		F. R. Henderson & Co.	Singapore	Seattle	284,000
Peninsular Trading Agency	Batavia	New York	75,060		Raw Products Co.	Singapore	New York	57,600
Gaston, Williams & Wigmore	Soerabaya	New York	68,220		Raw Products Co.	Penang	New York	12,240
Gaston, Williams & Wigmore	Batavia	New York	49,860		The Gates Rubber Co.	Singapore	Denver, Colo.	128,520
Vernon Metal & Produce Co.	Soerabaya	New York	49,860	5,332,235	L. Littlejohn & Co., Inc.	Port Sw't'n'h'n	New York	49,500
OCTOBER 2. By the S. S. F. R. Henderson & Co.	Colombo	New York	149,600		Thos. A. Desmond & Co.	Singapore	New York	48,060
William H. Stiles & Co.	Colombo	New York	20,240		Poel & Kelly	Penang	New York	47,160
Chas. T. Wilson Co., Inc.	Colombo	New York	10,080		Joosten & Janssen	Penang	New York	34,380
Meyer & Brown, Inc.	Colombo	New York	260,800					1,442,300
L. Littlejohn & Co., Inc.	Colombo	New York	179,200					
Poel & Kelly	Colombo	New York	59,785					
C. C. Trevanion & Co.	Colombo	New York	50,400	730,105				
OCTOBER 2. By the S. S. General Rubber Co.	Batavia	New York	54,000					
Thorntett & Fehr	Batavia	New York	19,980					
Thorntett & Fehr	Soerabaya	New York	6,300					
Firestone Tire & Rubber Co.	Batavia	New York	6,120					
Various*	Batavia	New York	54,360	140,760				
* 360 pounds shortshipped.								
OCTOBER 3. By the S. S. Aldens' Successors, Inc.	London	Boston	56,510	56,510				
OCTOBER 3. By the S. S. Poel & Kelly	Liverpool	New York	157,498					
General Rubber Co.	Liverpool	New York	99,360					
The Fisk Rubber Co.	Liverpool	Chicago Falls, Mass.	41,120	297,978				
OCTOBER 4. By the S. S. Poel & Kelly	London	New York	40,951	74,551				
L. Littlejohn & Co., Inc.	Colombo	New York	33,600					
OCTOBER 5. By the S. S. William H. Stiles & Co.	Colombo	New York	30,240					
Gaston, Williams & Wigmore	Colombo	New York	209,700					
The Goodyear Tire & Rubber Co.	Colombo	Akron, Ohio	139,680					
Fred Stern & Co.	Colombo	New York	69,120					
Volkhart Bros.	Colombo	New York	43,200					
C. C. Trevanion & Co.	Colombo	New York	33,660					
L. Littlejohn & Co., Inc.	Colombo	New York	238,000					
Thorntett & Fehr	Colombo	New York	12,600	776,200				
OCTOBER 6. By the S. S. Aldens' Successors, Inc.	Rotterdam	New York	176,611	176,611				
OCTOBER 6. By the S. S. The Goodyear Tire & Rubber Co.	Colombo	New York	60,300					
Meyer & Brown, Inc.	Colombo	New York	168,000					
L. Littlejohn & Co., Inc.	Colombo	New York	168,000					
Poel & Kelly	Colombo	New York	102,355	498,655				
OCTOBER 6. By the S. S. Curry, McPhillips & Co.	Hull	New York	65,340	65,340				
OCTOBER 6. By the S. S. Aldens' Successors, Inc.	London	New York	1,192,434					
The B. F. Goodrich Rubber Co.	London	Akron, O.	809,640					
Poel & Kelly	London	New York	301,410					
L. Littlejohn & Co., Inc.	London	New York	168,300					
T. D. Downing	London	New York	54,000					
Vernon Metal & Produce Co.	London	New York	26,640					
Various	London	New York	1,832,686	4,385,110				
OCTOBER 6. By the S. S. Curry, McPhillips & Co.	Antwerp	New York	10,890	10,890				
OCTOBER 6. By the S. S. F. R. Henderson & Co.	Singapore	New York	551,827					
J. T. Johnstone & Co.	Penang	New York	255,000					
Aldens' Successors, Inc.	Singapore	New York	112,038					
William H. Stiles & Co.	Singapore	New York	83,700					
Hood Rubber Co.	Singapore	Watertown	71,980					
Rubber Trading Co.	Singapore	New York	67,200					
Pell & Dumont, Inc.	Singapore	New York	63,000					
Chas. T. Wilson Co., Inc.	Penang	New York	78,400					
Pacific Trading Corp. of America	Singapore	New York	44,460					
Raw Products Co.	Singapore	New York	30,240					
W. S. Ryckman Co., Inc.	Singapore	New York	180					
L. Littlejohn & Co., Inc.	Singapore	New York	1,657,600					
Poel & Kelly	Singapore	New York	515,640					
Fred Stern & Co.	Singapore	New York	448,000					
Edward Maurer Co., Inc.	Singapore	New York	437,040					
Rubber Importers & Dealers Co., Inc.	Singapore	New York	280,980					
Gaston, Williams & Wigmore	Singapore	New York	254,060					
Thos. A. Desmond & Co.	Singapore	New York	238,320					
Jager & Co.	Singapore	New York	156,060					
East Asiatic Co.	Singapore	New York	98,280					
Joosten & Janssen	Singapore	New York	89,820					
Mitsui & Co., Ltd.	Singapore	New York	79,740					
Winter, Ross & Co.	Singapore	New York	75,780					
Vernon Metal & Produce Co.	Singapore	New York	61,200					
T. Jay France	Singapore	New York	45,000					
Rogers-Pyatt Shellac Co.	Singapore	New York	41,940					
The Goodyear Tire & Rubber Co.	Singapore	New York	1,889					
Frank P. Waterhouse & Co.	Singapore	New York	540					
Various	Singapore	New York	948,573	6,788,487				



## (S. S. Gaelic Prince—Continued.)

	Shipment from:	Shipped to:	Pounds.	Totals.
Curry, McPhillips & Co.	Singapore	New York	38,880	
Jaeger & Co., Ltd.	Singapore	New York	27,540	
Gravenhorst & Co.	Manilla, P. I.	New York	23,220	
Federal Products Co.	Singapore	New York	22,320	
Joosten & Janssen.	Singapore	New York	3,600	
Various	Singapore	New York	198,180	
Various	Singapore	New York	141,700	4,353,843
OCTOBER 16. By the S. S. <i>Calcutta Maru</i> , at New York.				
Chas. T. Wilson Co., Inc.	Colombo	New York	56,000	
William H. Stiles & Co.	Colombo	New York	30,240	
Aldens' Successors, Inc.	Colombo	New York	22,400	
L. Littlejohn & Co., Inc.	Colombo	New York	179,200	
Meyer & Brown, Inc.	Colombo	New York	150,100	
Fred. Stern & Co.	Colombo	New York	89,600	
The Goodyear Tire & Rubber Co.	Colombo	New York	48,960	
C. C. Trevanion & Co.	Colombo	New York	45,360	
Rogers-Pratt Shellac Co.	Colombo	New York	37,080	
Foel & Kelly.	Colombo	New York	36,720	
Various	Colombo	New York	57,600	753,260
OCTOBER 17. By the S. S. <i>Vardulia</i> , at New York.				
Poel & Kelly.	London	New York	519,720	
L. Littlejohn & Co., Inc.	London	New York	264,000	
Chas. T. Wilson Co., Inc.	London	New York	56,000	
Various	London	New York	749,860	1,589,580
OCTOBER 19. By the S. S. <i>Invincible</i> , at New York.				
L. Littlejohn & Co., Inc.	London	New York	258,480	
Edward Maurer Co., Inc.	London	New York	191,880	
Various	London	New York	831,100	1,281,460

## CENTRAL.

	Shipment from:	Shipped to:	Pounds.	Totals.
SEPTEMBER 22. By the S. S. <i>Advance</i> , at New York.				
Mecke & Co.	Cristobal	New York	2,400	
G. Amsinck & Co., Inc.	Cristobal	New York	2,300	
South & Central American Commercial Co.	Cristobal	New York	400	5,000
SEPTEMBER 26. By the S. S. <i>Panama</i> , at New York.				
Chas. E. Griffin.	Cristobal	New York	600	
Isaac Brandon & Bros.	Cristobal	New York	500	1,100
SEPTEMBER 27. By the S. S. <i>Abangarez</i> , at New York.				
Isaac Brandon & Bros.	Cristobal	New York	200	200
SEPTEMBER 27. By the S. S. <i>Zethon</i> , at New York.				
A. S. Cookman & Co.	Cristobal	New York	100	100
OCTOBER 2. By the S. S. <i>Mayaro</i> , from Trinidad, at New York.				
Southern Sales Corp.	Ciudad Bolivar	New York	4,500	
*Middleton & Co.	Ciudad Bolivar	New York	4,300	8,800
OCTOBER 10. Ex S. S. <i>Gauca</i> , from South Pacific, at New York.				
G. Amsinck & Co., Inc.	Colon	New York	6,200	
Dumarest Bros.	Colon	New York	1,200	
Fidanque Bros. & Sons.	Colon	New York	400	
Isaac Brandon & Bros.	Colon	New York	100	7,900
OCTOBER 14. By the S. S. <i>General W. G. Gorgas</i> , at New York.				
Pablo, Calvet & Co.	Cristobal	New York	70,000	
G. Amsinck & Co., Inc.	Cristobal	New York	18,000	
A. M. Capen's Sons, Inc.	Cristobal	New York	13,000	
Ultramares Corp.	Cristobal	New York	6,200	
William Peck & Co.	Cristobal	New York	4,900	
Mecke & Co.	Cristobal	New York	3,200	
W. R. Grace & Co.	Cristobal	New York	121,500	
Various	Cristobal	New York	1,400	237,800

\*West Indian rubber.

†Transhipped at South Pacific.

## AFRICANS.

SEPTEMBER 24. By the S. S. <i>Port Bowen</i> , at New York.				
Poel & Kelly.	Liverpool	New York	65,130	76,230
Meyer & Brown, Inc.	Liverpool	New York	11,100	
OCTOBER 1. By the S. S. <i>Niagara</i> , at New York.				
Curry, McPhillips & Co.	Bordeaux	New York	36,295	
Various	Bordeaux	New York	424,235	460,530
OCTOBER 6. By the S. S. <i>Lancastrian</i> , at New York.				
Curry, McPhillips & Co.	Antwerp	New York	94,451	94,541
OCTOBER 10. By the S. S. <i>Wheaton</i> , at New York.				
Curry, McPhillips & Co.	Antwerp	New York	2,300	2,300
OCTOBER 11. By the S. S. <i>Victoria</i> , at New York.				
L. Littlejohn & Co., Inc.	Liverpool	New York	40,230	
General Rubber Co.	Liverpool	New York	32,200	
Poel & Kelly.	Liverpool	New York	25,710	
Rubber Trading Co.	Liverpool	New York	11,200	109,360
OCTOBER 16. By the S. S. <i>Gothland</i> , at New York.				
Poel & Kelly.	Antwerp	New York	6,900	6,900

## PONTIANAK.

SEPTEMBER 19. By the S. S. <i>Toyama Maru</i> , at New York.				
Meyer Bros. & Co.	Singapore	Seattle	179,100	179,100
OCTOBER 1. By the S. S. <i>Western Cross</i> , at New York.				
Joosten & Janssen.	Batavia	New York	3,000	3,000
OCTOBER 6. By the S. S. <i>Homestead</i> , at New York.				
United Malaysian Rubber Co.	Singapore	New York	356,283	
Peterson, Simmons & Co.	Singapore	New York	437,700	
Jaeger & Co., Limited.	Singapore	New York	237,600	
Stephano Berizzi & Co.	Singapore	New York	79,200	
Rubber Importers & Dealers' Co., Inc.	Singapore	New York	45,600	1,156,333

	Shipment from:	Shipped to:	Pounds.	Totals.
OCTOBER 14. By the S. S. <i>East Indian</i> , at New York.				
Hadden & Co.	London	New York	59,700	59,700
OCTOBER 15. By the S. S. <i>Yseldijk</i> , at New York.				
United Malaysian Rubber Co., Ltd.	Soerabaya	New York	538,247	
Various	Borneo	New York	20,953	559,200
OCTOBER 15. By the S. S. <i>Gaelic Prince</i> , from Philippine Islands, at New York.				
L. Littlejohn & Co.	Singapore	New York	364,500	
Jaeger & Co., Limited.	Singapore	New York	135,000	
Innes & Co.	Singapore	New York	62,400	
Chas. T. Wilson Co., Inc.	Singapore	New York	6,600	
F. R. Henderson & Co.	Singapore	New York	300	568,800

## BALATA.

SEPTEMBER 19. By the S. S. <i>Matura</i> , at New York.				
G. Amsinck & Co., Inc.	Trinidad	New York	10,695	
General Export & Commission Co.	Trinidad	New York	9,912	
Various	Trinidad	New York	31,161	51,772
SEPTEMBER 26. By the S. S. <i>Panama</i> , at New York.				
Isaac Brandon & Bros.	Cristobal	New York	4,800	
G. Amsinck & Co., Inc.	Cristobal	New York	900	
New York American Industries	Cristobal	New York	900	
Various	Cristobal	New York	3,150	9,750

OCTOBER 2. By the S. S. <i>Mayaro</i> , from Trinidad, at New York.				
Southern Sales Corporation	Ciudad Bolivar	New York	24,300	
G. Amsinck & Co., Inc.	Ciudad Bolivar	New York	16,950	
South & Central American Commercial Co.	Ciudad Bolivar	New York	10,925	
Middleton & Co.	Ciudad Bolivar	New York	6,150	
Mueller, Schall & Co.	Ciudad Bolivar	New York	3,600	61,925

OCTOBER 3. By the S. S. <i>Lakehurst</i> , at New York.				
W. Reed Williams, Inc.	Cristobal	New York	9,250	9,250

OCTOBER 5. By the S. S. <i>General O. H. Ernst</i> , at New York.				
Antioquia Commercial Corp.	Cristobal	New York	6,800	
Mecke & Co.	Cristobal	New York	3,000	
J. S. Sembrada & Co.	Cristobal	New York	750	10,550

OCTOBER 9. By the S. S. <i>Turrialba</i> , at New York.				
American Trading Co.	Kingston	New York	3,150	3,150

OCTOBER 10. Ex S. S. <i>Gauca</i> , from South Pacific, at New York.*				
Fromme & Co.	Colon	New York	9,900	
Various	Colon	New York	6,450	16,350

OCTOBER 14. By the S. S. <i>Belgie</i> , at New York.				
Earle Bros.	Liverpool	New York	3,000	3,000

\*Transhipped at South Pacific.

## GUITA PERCHA.

OCTOBER 6. By the S. S. <i>Homestead</i> , at New York.				
Jaeger & Co., Limited.	Singapore	New York	60,000	60,000
OCTOBER 15. By the S. S. <i>Yseldijk</i> , at New York.				
United Malaysian Rubber Co., Limited.	Borneo	New York	91,060	91,060

## GUTTAS.

OCTOBER 15. By the S. S. <i>Gaelic Prince</i> , via P. I., at New York.				
L. Littlejohn & Co.	Singapore	New York	187,500	187,500

## GUAYULE.

SEPTEMBER 22. By the S. S. <i>Esperanza</i> , at New York.				
G. Amsinck & Co., Inc.	Vera Cruz	New York	13,500	13,500

## UNITED STATES CRUDE RUBBER IMPORTS FOR 1919 (BY MONTHS).

	Plantations.	Paras.	Afri-cans.	Cen-trals.	Guay-ule.	Manicoba and Totals for 1918.	Totals for 1919.
1919.							
January	4,906	2,141	2	114	72	7,235	16,084
February	14,079	2,701	489	100	87	17,456	13,108
March	23,680	3,808	337	211	187	28,223	17,161
April	24,678	2,794	90	144	330	28,146	13,425
May	14,856	772	389	97	234	16,348	16,288
June	13,645	1,706	264	263	390	16,319	24,124
July	17,645	121	16	82	101	17,965	16,092
August	8,221	2,594	137	74	41	11,067	10,421
September	10,143	3,423	312	51	11	14,036	5,353
Totals	131,853	20,060	2,036	1,136	1,453	257	156,095

(Compiled by The Rubber Association of America, Inc.)

# TYRE MAKING MACHINE

## SYSTEM "A. MATHERN"

*The most widely used in Europe, owing to its perfection and simplicity in use. Millions of Tyres have been made on this machine during the last ten years.*

**Sole Maker: A. MATHERN, Zollikon - Zurich, Switzerland**

**F. CHASSAING, 307, Beckenham Road, Beckenham, LONDON.**

**SOLE AGENTS FOR**

**Great Britain, Belgium, Holland, Denmark, Sweden, Norway and the United States of America**

The contract between The Batavia Rubber Company and the Keystone Tire & Rubber Company for the purchase by the Keystone Company of the output of the factory of The Batavia Rubber Company has been terminated and the latter Company is now selling its tires direct to the trade.

### THE BATAVIA RUBBER COMPANY

**Batavia, N. Y.**

**New York Office—52 Wall Street**

**EXPORTS OF INDIA RUBBER MANUFACTURES AND INSULATED WIRE AND CABLE FROM THE UNITED STATES BY COUNTRIES, DURING THE MONTH OF AUGUST, 1919.**

EXPORTED TO—	Belting Hose and Packing. Value.	Boots.		Shoes.		Druggists' Rubber Sundries. Value.	Tires.		Insulated Wire and Cables. Value.	All Other Manufactures of Rubber. Value.	Totals. Value.
		Pairs.	Value.	Pairs.	Value.		Auto- mobiles. Value.	All Others. Value.			
EUROPE:											
Austria-Hungary										\$42,200	\$42,200
Azores and Madeira Islands				222	\$284						284
Belgium	\$2,718					\$657	\$3,170		\$17,027	3,001	26,573
Denmark	901			29,145	19,130	135	166,448	\$5,040	4,031	50,768	246,453
France	4,857	7	\$28				62,665			33,125	100,675
Greece							9,031			540	9,617
Italy	63	168	531	4,248	3,586	234	25		3,115	455	8,009
Malta, Gozo and Cyprus Islands										47	47
Netherlands	21,344			11,928	6,974	321	105,442	3,685	3,199	7,268	148,233
Norway	40,307	24	32	101,523	55,806	2,084	122,360	13,961	50,248	26,342	311,140
Portugal							51,126	6,000	2,030	114	59,270
Roumania							14,561				14,561
Russia in Europe											
Spain	35	12	\$4	96	75	513	158,841		2,217	8,330	170,065
Sweden	13,955			372	219	5,117	31,876	2,750	10,950	3,559	66,426
Switzerland							7,490				7,490
Turkey in Europe				2,184	2,292				1,113		3,405
England	47,447	10,860	15,506	281,645	159,415	12,049	154,988		38,745	150,925	579,075
Scotland	2,570					301				931	3,802
Ireland										645	645
TOTALS, EUROPE	\$134,243	11,071	\$16,151	441,363	\$249,751	\$19,411	\$888,023	\$31,436	\$132,075	\$328,261	\$1,797,981
NORTH AMERICA:											
Bermuda	\$355			832	\$941	\$29	\$163	\$98	\$183	\$88	\$1,857
British Honduras	143			906	944	27	575			142	1,835
Canada	20,062	3,978	\$12,351	6,577	9,452	17,004	71,518	4,308	13,787	149,225	297,707
Costa Rica	1,227					57	254		74	41	1,653
Guatemala	244			60	66	829	5,239	955	1,276	1,534	10,143
Honduras	715					160	4,121			293	5,289
Nicaragua	1,461			225	162	63	2,620	114	299	671	5,390
Panama	6,288	66	370	1,722	1,980	61	21,345	478	1,940	1,576	34,038
Salvador	1,991					158	3,324		889	1,813	8,175
Mexico	37,580			4,988	4,489	10,830	57,354	5,427	21,755	20,935	158,370
Miquelon, Langley, etc.		221	820		4						824
Newfoundland and Labrador	12,734	12,257	37,804	18,573	17,322	63	2,395	222	5,391	5,125	81,056
Barbados	83	6	18	308	325	92	1,577		73	433	2,601
Jamaica	435			1,928	1,966	104	12,533	190	36	1,957	17,221
Trinidad and Tobago	818					281	3,474	311	265	251	5,400
Other British West Indies	1,061			544	438	94	3,112	82	520	432	5,739
Cuba	39,549			17,948	17,970	9,431	141,928	21,440	14,330	43,338	287,986
Danish West Indies	236			\$41	1,178		1,151	118	85	3	2,771
Dutch West Indies	18						1,427	25		6	1,476
French West Indies	1,452			1,074	834		6,712		17	495	9,510
Haiti	360						11,080	113	53	604	12,223
Dominican Republic	1,345			108	121	3,785	36,465	2,587	659	2,625	47,587
TOTALS, NORTH AMERICA	\$128,157	16,528	\$51,363	56,636	\$58,192	\$43,072	\$388,376	\$36,472	\$61,632	\$231,587	\$988,851
SOUTH AMERICA:											
Argentina	\$21,480			35,951	\$29,056	\$4,907	\$210,527	\$2,726	\$105,322	\$41,699	\$415,717
Bolivia	6,535					422	1,662		377	320	9,516
Brazil	17,303	96	\$525	12,075	9,647	5,007	94,196	3,196	52,886	26,034	208,794
Chile	9,644	74	522	2,826	3,009	3,943	44,089	87	18,283	4,314	83,891
Colombia	1,291			14	8	1,262	7,911	174	1,487	1,070	13,203
Ecuador	4,315					28	4,660		544	572	10,119
British Guiana	76						2,495	250	321	161	3,503
Dutch Guiana	356			120	78		514		27	168	1,143
Paraguay	118								238		356
Peru	3,472	24	300	973	1,098	1,791	16,686	339	7,932	3,520	35,138
Uruguay	1,531			144	95	3,610	117,866		7,564	11,067	141,733
Venezuela	2,514					317	13,882	220	4,163	1,533	22,629
TOTALS, SOUTH AMERICA	\$68,635	194	\$1,347	52,103	\$42,991	\$121,287	\$514,688	\$6,992	\$199,344	\$90,458	\$945,742
ASIA:											
China	\$1,538	2	\$11	31,584	\$34,262	\$582	\$11,155	\$4,297	\$72,170	\$9,074	\$133,089
Japanese China				2,164	1,815					140	1,955
Chosen				124	119					46	165
British India	4,397			950	788	1,328	30,948		60,761	3,107	101,329
Straits Settlements				240	142	48	95,298	8,797		1,636	105,921
Other British East Indies						105	1,937			265	2,307
Dutch East Indies	2,660			216	326	252	54,656	3,992	58,932	7,821	128,639
French East Indies	17								595	92	694
Hongkong	36			77	135	308	2,093		1,602	500	4,674
Japan	28,413	1,650	4,945	39,109	36,328	2,890	64,426		6,118	15,378	158,498
Persia							167				167
Russia in Asia	880			3	4	268	600			382	2,134
Siam	5					93	1,055				1,153
Turkey in Asia				2,496	7,578				134	410	8,122
TOTALS, ASIA	\$37,946	1,652	\$4,956	76,963	\$81,497	\$5,874	\$262,335	\$17,086	\$200,312	\$38,841	\$648,847
OCEANIA:											
Australia	\$11,372	576	\$1,522			\$2,845	\$31,607	\$3,511	\$6,368	\$5,827	\$63,052
New Zealand	22,965	144	538	144	\$336	1,116	110,662	472	2,295	17,321	155,705
Other British Oceania							256	74		294	624
French Oceania	134					3	967	235		353	1,692
German Oceania							1,794	74		141	2,009
Philippine Islands	50,152			21,637	26,444	1,780	86,089	11,222	75,843	62,590	314,120
TOTALS, OCEANIA	\$84,623	720	\$2,060	21,781	\$26,780	\$5,744	\$231,375	\$15,588	\$84,506	\$86,526	\$537,202
AFRICA:											
British West Africa							\$5,070			\$652	\$5,722
British South Africa	\$62,027	716	\$2,868	2,035	\$1,850	\$529	53,783		\$62,132	11,489	194,678
British East Africa							585			3	588
French Africa							239				239
Portuguese Africa	2,473					21				16	2,510
Spanish Africa	206										206
Egypt				40	51		6,500	\$2,999	842	1,344	11,826
TOTALS, AFRICA	\$64,706	716	\$2,868	2,075	\$1,901	\$550	\$66,267	\$2,999	\$62,974	\$13,504	\$215,769
TOTALS	\$518,310	30,881	\$78,745	640,921	\$459,142	\$95,938	\$2,351,064	\$110,573	\$741,443	\$789,177	\$5,144,392



## SHIPMENTS TO NON-CONTIGUOUS TERRITORY.

	Belting Hose and Packing. Value.	Boots and Shoes.		Druggists' Rubber Sundries. Value.	Tires.		Insulated Wire and Cables. Value.	All Other Manufactures of Rubber. Value.	Totals. Value.
		Pairs.	Value.		Auto- mobiles. Value.	All Others. Value.			
Hawaii .....	\$8,284	787	\$942	.....	\$80,186	\$2,073	.....	\$7,709	\$99,194
Porto Rico .....	4,819	10,645	7,136	.....	87,704	667	.....	16,528	116,854
TOTALS .....	\$13,103	11,432	\$8,078	.....	\$167,890	\$2,740	.....	\$24,237	\$216,048

(Compiled by the Bureau of Foreign Commerce, Department of Commerce, Washington, D. C.)

## Official India Rubber Statistics for the United States.

Calendar Year 1918.

## INDIA RUBBER.

## IMPORTS OF CRUDE INDIA RUBBER BY COUNTRIES (FREE).

From—	Pounds.	Value.
EUROPE—		
France .....	169,318	\$72,406
Portugal .....	424,424	152,362
UNITED KINGDOM—		
England .....	6,627,165	3,723,993
Totals, Europe .....	7,220,907	\$3,948,761
NORTH AMERICA—		
Canada .....	2,712,336	\$1,314,386
Central American States—		
Costa Rica .....	22,579	11,026
Guatemala .....	12,012	3,113
Honduras .....	7,376	3,236
Nicaragua .....	158,140	48,339
Panama .....	164,445	67,346
Salvador .....	22,592	9,973
Mexico .....	2,185,809	850,123
West Indies—		
Trinidad and Tobago .....	51,246	30,618
Other British .....	434	216
Cuba .....	4,390	1,452
Totals, North America .....	5,341,359	\$2,339,828

SOUTH AMERICA—		
Argentina .....	390,734	\$107,832
Bolivia .....	474,781	207,793
Brazil .....	40,332,620	13,378,588
Chile .....	1,246	560
Colombia .....	884,792	356,226
Ecuador .....	244,521	81,424
Guiana .....		
British .....	47,561	37,540
Dutch .....	5,916	3,798
Peru .....	1,373,751	489,146
Uruguay .....	8,585	3,916
Venezuela .....	158,857	74,825
Totals, South America .....	43,921,364	\$14,741,648

ASIA—		
China .....	559,658	\$180,307
China, leased territory—		
French .....	15,680	6,041
East Indies—		
British India .....	9,248,210	4,091,968
Straits Settlements .....	198,904,100	91,142,953
Other British .....	19,543,495	9,738,475
Dutch .....	37,344,813	18,204,689
Hongkong .....	562,717	294,381
Japan .....	2,529,395	1,346,494
Totals, Asia .....	268,710,068	\$125,005,308

OCEANIA—		
Other British .....	622	\$378
Philippine Islands .....	666,102	311,737
Totals, Oceania .....	666,724	\$312,115

AFRICA—		
British West Africa .....	76,264	\$19,446
Portuguese Africa .....	22,622	11,207
Totals, Africa .....	98,886	\$30,653

Calendar year, 1918 .....	325,959,308	146,378,313
Fiscal year, 1917-18 .....	389,599,015	202,800,392
Fiscal year, 1916-17 .....	333,373,711	189,328,674
Fiscal year, 1915-16 .....	267,775,557	155,044,790
Fiscal year, 1914-15 .....	172,068,428	83,030,269
Fiscal year, 1913-14 .....	131,995,742	71,219,851
Fiscal year, 1912-13 .....	113,384,359	90,170,316
Fiscal year, 1911-12 .....	110,210,173	93,013,255
Fiscal year, 1910-11 .....	72,046,260	76,244,603
Fiscal year, 1909-10 .....	101,044,681	101,078,825
Fiscal year, 1908-09 .....	88,359,895	61,709,723
Fiscal year, 1907-08 .....	62,233,160	36,613,185
Fiscal year, 1906-07 .....	76,963,838	58,919,981
Fiscal year, 1905-06 .....	57,844,345	45,114,450

## IMPORTS OF CRUDE INDIA RUBBER BY CUSTOMS DISTRICTS (FREE).

At—	Pounds.	Value.
Massachusetts .....	10,222,733	\$3,671,477
New York .....	119,664,398	49,381,919
Philadelphia .....	31,480	11,496
New Orleans .....	10,650	3,234
San Antonio .....	808,372	302,187
San Francisco .....	53,063,123	28,445,675
Southern California .....	78,345	37,034
Washington .....	109,557,617	51,099,147
Buffalo .....	693,490	319,270
Chicago .....	1,297,791	648,524
Dakota .....	6,008,636	2,771,712
Michigan .....	336,194	150,439
Ohio .....	19,157,829	7,424,035
St. Lawrence .....	487,934	269,357
Vermont .....	4,095,971	1,630,230
Minnesota .....	299,568	149,784
Omaha .....	48,445	26,644
Pittsburgh .....	96,732	36,149
Calendar year, 1918 .....	325,959,308	\$146,378,313

## IMPORTS OF MANUFACTURES OF INDIA RUBBER AND GUTTA PERCHA BY COUNTRIES (DUTYABLE).

[+ indicates increase; — indicates decrease, compared with preceding year.]	
From—	Value.
EUROPE—	
France .....	\$4,285+
Italy .....	487
Spain .....	665—
Switzerland .....	2,564+
United Kingdom—	
England .....	216,425—
Scotland .....	26,936+
Ireland .....	1,659+
Total, Europe .....	\$253,021
NORTH AMERICA—	
Canada .....	\$167,682—
Mexico .....	265+
Total, North America .....	\$167,947

SOUTH AMERICA—		
Colombia .....	\$2,900	
ASIA—		
Japan .....	21,441—	
OCEANIA—		
British New Zealand .....	23+	
Totals, Calendar year, 1918 .....	\$445,332	

	Gutta Percha.	Rubber.
Fiscal year, 1917-18 .....	\$16,978	\$599,763
Fiscal year, 1916-17 .....	173,975	608,954
Fiscal year, 1915-16 .....	57,875	398,020
Fiscal year, 1914-15 .....	10,841	791,281
Fiscal year, 1913-14 .....	42,023	1,517,789
Fiscal year, 1912-13 .....	77,300	1,217,236
Fiscal year, 1911-12 .....	41,098	874,736
Fiscal year, 1910-11 .....	61,283	875,125
Fiscal year, 1909-10 .....	80,567	1,154,347
Fiscal year, 1908-09 .....	71,819	1,391,773
Fiscal year, 1907-08 .....	93,545	1,956,590

	Gutta Percha.	Rubber.
Fiscal year, 1917-18 .....	\$16,978	\$599,763
Fiscal year, 1916-17 .....	173,975	608,954
Fiscal year, 1915-16 .....	57,875	398,020
Fiscal year, 1914-15 .....	10,841	791,281
Fiscal year, 1913-14 .....	42,023	1,517,789
Fiscal year, 1912-13 .....	77,300	1,217,236
Fiscal year, 1911-12 .....	41,098	874,736
Fiscal year, 1910-11 .....	61,283	875,125
Fiscal year, 1909-10 .....	80,567	1,154,347
Fiscal year, 1908-09 .....	71,819	1,391,773
Fiscal year, 1907-08 .....	93,545	1,956,590

## IMPORTS OF INDIA RUBBER AND GUTTA PERCHA BY CUSTOMS DISTRICTS (DUTYABLE).

At—	Value.
Maine and New Hampshire .....	\$748
Maryland .....	7,323
Massachusetts .....	19,579
New York .....	374,593
Philadelphia .....	794
Porto Rico .....	292
Rhode Island .....	741
Alaska .....	2
Hawaii .....	2,136
Oregon .....	3
San Francisco .....	1,549

Southern California .....	Value.
Washington .....	144
Buffalo .....	1,295
Chicago .....	2,580
Dakota .....	3,504
Duluth and Superior .....	7
Michigan .....	11,015
Montana and Idaho .....	128
Ohio .....	5,518
Rochester .....	23
St. Lawrence .....	203
Vermont .....	185
Wisconsin .....	9,193
Omaha .....	400
Pittsburgh .....	3,316
St. Louis .....	2
Calendar year, 1918 .....	\$445,332

## REEXPORTS OF IMPORTED CRUDE INDIA RUBBER.

To—	Pounds.	Value.
UNITED KINGDOM—		
England .....	123,395	\$72,920
Canada .....	5,568,816	2,794,008
Mexico .....	12	10
West Indies—		
Cuba .....	229,790	120,996
Chile .....	1,617	1,230
British Oceania—		
Australia .....	227,125	144,458
Calendar year, 1918 .....	6,150,755	\$3,133,622
Fiscal year, 1917-18 .....	8,208,280	4,274,543
Fiscal year, 1916-17 .....	12,355,898	7,304,820
Fiscal year, 1915-16 .....	4,662,889	2,661,331
Fiscal year, 1914-15 .....	6,383,145	3,361,107
Fiscal year, 1913-14 .....	3,747,749	2,398,150
Fiscal year, 1912-13 .....	5,272,387	4,476,379
Fiscal year, 1911-12 .....	5,610,951	4,890,905
Fiscal year, 1910-11 .....	5,267,588	5,439,282
Fiscal year, 1909-10 .....	6,492,947	7,629,380
Fiscal year, 1908-09 .....	3,791,971	2,964,496
Fiscal year, 1907-08 .....	4,110,667	2,994,208
Fiscal year, 1906-07 .....	4,215,350	3,593,912

## REEXPORTS OF MANUFACTURES OF INDIA RUBBER AND GUTTA PERCHA.

To—	Value.
United Kingdom—England .....	\$2,018
Canada .....	36,024
Central American States—Nicaragua .....	19
Mexico .....	33
West Indies—Cuba .....	586
Argentina .....	383
Venezuela .....	84
British Oceania—New Zealand .....	954
Calendar year, 1918 .....	\$40,101

	Gutta Percha.	Rubber.
Fiscal year, 1917-18 .....	\$18,216	\$13,563
Fiscal year, 1916-17 .....	421	10,905
Fiscal year, 1915-16 .....	537	38,649
Fiscal year, 1914-15 .....		7,489
Fiscal year, 1913-14 .....		2,538
Fiscal year, 1912-13 .....		7,973
Fiscal year, 1911-12 .....	65	6,681
Fiscal year, 1910-11 .....	8,687	29,356
Fiscal year, 1909-10 .....		13,568
Fiscal year, 1908-09 .....		36,401
Fiscal year, 1907-08 .....		176,129
Fiscal year, 1906-07 .....		32,712

## GUTTA PERCHA.

## IMPORTS OF CRUDE GUTTA PERCHA BY COUNTRIES (FREE).

From—	Pounds.	Value.
EUROPE—		
United Kingdom—		
England .....	22,791	\$6,239
Totals, Europe .....	22,791	\$6,239

## GUTTA PERCHA—Continued.

ASIA—		
East Indies—		
British—Straits Settlements	354,794	\$108,718
Dutch	306,241	18,532
Totals, Asia	661,035	\$127,350
AFRICA—		
British Africa—		
West	22,400	\$7,392
South	501,760	84,941
Totals, Africa	524,160	\$92,333

Calendar year, 1918...	1,207,986	\$225,922
Fiscal year, 1917-18...	1,151,312	147,323
Fiscal year, 1916-17...	2,021,794	332,223
Fiscal year, 1915-16...	3,188,449	342,226
Fiscal year, 1914-15...	1,618,214	230,750
Fiscal year, 1913-14...	1,846,109	323,567
Fiscal year, 1912-13...	480,853	167,313
Fiscal year, 1911-12...	1,204,406	225,797
Fiscal year, 1910-11...	1,648,921	390,548
Fiscal year, 1909-10...	784,501	167,873
Fiscal year, 1908-09...	255,559	82,136
Fiscal year, 1907-08...	188,610	100,305
Fiscal year, 1906-07...	546,890	201,339
Fiscal year, 1905-06...	500,770	188,161

## IMPORTS OF CRUDE GUTTA PERCHA BY CUSTOMS DISTRICTS (FREE).

At—	Pounds.	Value.
New York	470,477	\$57,553
New Orleans	501,760	84,941
San Francisco	7,053	430
Washington	228,696	82,998

## Calendar year, 1918... \$225,922

## REEXPORTE OF CRUDE GUTTA PERCHA.

To—	Pounds.	Value.
England	126,731	\$29,015

## Calendar year, 1918... \$29,015

## Calendar year, 1917-18... 47,211

## Fiscal year, 1916-17... 558

## Fiscal year, 1915-16... 11,446

## Fiscal year, 1914-15... 4,603

## Fiscal year, 1913-14... 5,255

## Fiscal year, 1912-13... 2,665

## Fiscal year, 1911-12... 1,011

## Fiscal year, 1910-11... 945

## Fiscal year, 1909-10... 19,235

## Fiscal year, 1908-09... 13,886

## Fiscal year, 1907-08... 3,730

## Fiscal year, 1906-07... 700

## GUAYULE.

## IMPORTS OF GUAYULE BY COUNTRIES (FREE).

From—	Pounds.	Value.
NORTH AMERICA—		
Mexico	1,371,385	\$411,322
SOUTH AMERICA—		
Colombia	4,700	2,162

## Calendar year, 1918... \$413,484

## Fiscal year, 1917-18... 1,341,095

## Fiscal year, 1916-17... 764,484

## Fiscal year, 1915-16... 880,813

## Fiscal year, 1914-15... 1,441,367

## Fiscal year, 1913-14... 607,076

## Fiscal year, 1912-13... 4,345,088

## Fiscal year, 1911-12... 6,463,787

## Fiscal year, 1910-11... 10,443,157

## IMPORTS OF GUAYULE BY CUSTOMS DISTRICTS (FREE).

At—	Pounds.	Value.
New York	4,700	\$2,162
El Paso	47,950	8,631
San Antonio	1,323,435	402,691

## Calendar year, 1918... \$413,484

## REEXPORTE OF GUAYULE.

To—	Pounds.	Value.
Canada	9,778	\$2,936

## Calendar year, 1918... \$2,936

## JELUTONG.

## (PONTIANAK.)

## IMPORTS OF JELUTONG BY COUNTRIES (FREE).

From—	Pounds.	Value.
EUROPE—		
England	2,675	\$113
Totals, Europe	2,675	\$113
NORTH AMERICA—		
Canada	4,051	\$284
Totals, North America	4,051	\$284
SOUTH AMERICA—		
Colombia	16,825	\$4,238
Totals, South America	16,825	\$4,238

## ASIA—

## East Indies—

## British—

## Straits Settlements

## Other British

## Dutch

## Japan

## Totals, Asia

## 9,808,925 \$678,916

Calendar year, 1918...	9,932,476	\$683,551
Fiscal year, 1917-18...	7,481,292	474,366
Fiscal year, 1916-17...	27,858,335	1,322,262
Fiscal year, 1915-16...	14,851,264	731,995
Fiscal year, 1914-15...	24,926,571	1,155,402
Fiscal year, 1913-14...	45,345,338	2,174,441
Fiscal year, 1912-13...	48,795,268	2,255,050
Fiscal year, 1911-12...	51,420,872	2,872,633
Fiscal year, 1910-11...	52,392,444	2,419,223
Fiscal year, 1909-10...	24,826,296	852,372
Fiscal year, 1908-09...	22,803,303	1,039,776
Fiscal year, 1907-08...	28,437,660	1,085,098

## IMPORTS OF JELUTONG BY CUSTOMS DISTRICTS (FREE).

At—	Pounds.	Value.
New York	6,983,863	\$482,525
San Francisco	1,351,171	99,082
Washington	1,379,896	100,240
Vermont	15,546	1,704

## Calendar year, 1918... \$683,551

## IMPORTS OF JELUTONG (DUTIABLE).

Fiscal year 1917-18...	9,994,572	\$501,450
Fiscal year 1916-17...	23,376,389	1,044,022

## REEXPORTE OF JELUTONG.

To—	Pounds.	Value.
Canada	73,868	\$9,756

## BALATA.

## IMPORTS OF BALATA BY COUNTRIES (FREE).

From—	Pounds.	Value.
NORTH AMERICA—		
Central American States—		
Panama	535,065	\$224,348
West Indies—		
Trin. and Tobago	53,883	34,588
Dutch	32,814	23,991
Totals, North America	621,762	\$282,927

## SOUTH AMERICA—

## Brazil

## Colombia

## Ecuador

## Guiana

## British

## Dutch

## Venezuela

## Totals, South America

## 925,576 \$553,456

## Calendar year, 1918... 1,547,338

## Fiscal year, 1917-18... 2,449,881

## Fiscal year, 1916-17... 3,287,445

## Fiscal year, 1915-16... 2,544,405

## Fiscal year, 1914-15... 2,472,224

## Fiscal year, 1913-14... 1,533,024

## Fiscal year, 1912-13... 1,318,598

## Fiscal year, 1911-12... 1,517,066

## Fiscal year, 1910-11... 878,305

## Fiscal year, 1909-10... 399,003

## Fiscal year, 1908-09... 1,157,018

## Fiscal year, 1907-08... 584,582

## Fiscal year, 1906-07... 799,029

## Fiscal year, 1905-06... 374,220

## IMPORTS OF BALATA BY CUSTOMS DISTRICTS (FREE).

At—	Pounds.	Value.
New York	1,547,338	\$836,383

## REEXPORTE OF BALATA.

To—	Pounds.	Value.
EUROPE—		
Greece	5,000	\$4,625
United Kingdom—		
England	637,822	\$384,820
Scotland	10,080	5,350
Totals, Europe	652,902	\$394,795
NORTH AMERICA—		
Canada	9,639	5,443
Japan	43,644	36,014

## Calendar year, 1918... \$436,252

## Fiscal year, 1917-18... 473,915

## Fiscal year, 1916-17... 879,765

## Fiscal year, 1915-16... 667,168

## Fiscal year, 1914-15... 1,076,619

## Fiscal year, 1913-14... 127,139

## Fiscal year, 1912-13... 118,334

## Fiscal year, 1911-12... 62,529

## Fiscal year, 1910-11... 284,589

## Fiscal year, 1909-10... 42,750

## Fiscal year, 1908-09... 223,907

## Fiscal year, 1907-08... 18,741

## Fiscal year, 1906-07... 12,659

## RECLAIMED RUBBER.

## EXPORTS OF RECLAIMED RUBBER BY COUNTRIES.

To—	Pounds.	Value.
EUROPE—		
France	137,519	\$20,061
Italy	143,000	33,319
Totals, Europe	280,519	\$53,380

NORTH AMERICA—		
Canada	2,591,012	\$441,492
Honduras	5	1
Cuba	20,663	4,917
Totals, North America	2,611,680	\$446,410

## ASIA—

## Straits Settlements

## Japan

## Totals, Asia

## 11,200 \$2,268

## AFRICA—

## South Africa

## Totals, Africa

## 800 \$108

## Calendar year, 1918... 2,904,234

## Fiscal year, 1917-18... 3,284,958

## Fiscal year, 1916-17... 4,938,991

## Fiscal year, 1915-16... 6,406,946

## Fiscal year, 1914-15... 5,970,380

## Fiscal year, 1913-14... 5,583,860

## Fiscal year, 1912-13... 5,413,247

## Fiscal year, 1911-12... 5,397,806

## Fiscal year, 1910-11... 4,994,527

## Fiscal year, 1909-10... 3,622,556

## Fiscal year, 1908-09... 3,196,551

## Fiscal year, 1907-08... 2,947,974

## Fiscal year, 1906-07... 4,550,788

## Fiscal year, 1905-06... 4,084,696

## Fiscal year, 1904-05... 522,902

## (a) Not officially reported.

## EXPORTS OF RECLAIMED RUBBER BY CUSTOMS DISTRICTS.

## At—

## New York

## New Orleans

## San Francisco

## Buffalo

## Dakota

## Michigan

## St. Lawrence

## Vermont

## Calendar year, 1918... 2,904,234

## \$502,176

## SUBSTITUTES, ELASTICON, ETC.

## IMPORTS OF ELASTICON AND SIMILAR SUBSTITUTES FOR INDIA RUBBER BY COUNTRIES (DUTIABLE).

## From—

## EUROPE—

## United Kingdom—

## England

## Totals, Europe

## 4,623

## ASIA—

## East Indies—

## British—

## Straits Settlements

## Dutch

## Total, Asia

## 378,874

## Calendar year, 1918... \$383,497

## Fiscal year, 1917-18... 136,438

## Fiscal year, 1916-17... 39,815

## Fiscal year, 1915-16... 16,179

## Fiscal year, 1914-15... 30,349

## Fiscal year, 1913-14... 87,642

## Fiscal year, 1912-13... 97,452

## Fiscal year, 1911-12... 87,328

## Fiscal year, 1910-11... 115,601

## Fiscal year, 1909-10... 114,516

## Fiscal year, 1908-09... 60,625

## Fiscal year, 1907-08... 27,000

## IMPORTS OF ELASTICON AND SIMILAR SUBSTITUTES OF INDIA RUBBER BY CUSTOMS DISTRICTS (DUTIABLE).

## At—

## Massachusetts

## New York

## San Francisco

## Washington

## Calendar year, 1918... \$383,497

## REEXPORTE OF ELASTICON AND SIMILAR SUBSTITUTES OF INDIA RUBBER BY COUNTRIES.

## From—

## UNITED KINGDOM—

## Scotland

## Canada

## Japan

## French Oceania

## Calendar year, 1918... \$65,765

## Fiscal year, 1917-18... 11,098

## SCRAP RUBBER.

## IMPORTS OF SCRAP RUBBER BY COUNTRIES (FREE).

## To—

## EUROPE—

## France

## Italy

## United Kingdom—

## England

SCRAP RUBBER—Continued.			IMPORTS OF SCRAP RUBBER BY CUSTOMS DISTRICTS (FREE).			EXPORTS OF SCRAP RUBBER BY CUSTOMS DISTRICTS.		
NORTH AMERICA—			At—			At—		
Canada	1,390,235	\$76,940	Maine and New Hampshire	Pounds.	Value.	Maine and New Hampshire	Pounds.	Value.
Central American States—			Maryland	224,275	\$21,454	Massachusetts	2,285	\$224
Costa Rica	200	14	Massachusetts	203,961	33,630	New York	8,041	4,452
Panama	53,439	2,908	New York	56,087	1,611	New York	178	27
Mexico	88,514	3,032	Galveston	6,742,948	529,933	San Antonio	100	2
Newfoundland and Labrador	64,205	4,984	San Francisco	54,300	1,331	Southern California	40	10
West Indies—			Southern California	93,341	3,296	Buffalo	1,330,459	170,410
British—			Washington	100	5	Dakota	3,675	360
Jamaica	1,912	118	Buffalo	202,656	10,501	Michigan	430,055	29,307
Trinidad and Tobago	6,543	361	Chicago	296,637	2,534	St. Lawrence	841,607	63,411
Other British	194	109	Michigan	30,491	3,763	Vermont	315,489	19,680
Cuba	585,435	28,402	Ohio	194,357	2,843			
Dominican Republic	468	23	St. Lawrence	47,057	9,954			
Haiti	150	20	Vermont	220,435	4,605			
				159,775				
Totals, North America	2,191,895	\$116,911	Calendar year, 1918...	8,526,420	\$645,581	Totals	2,931,929	\$287,883
SOUTH AMERICA—			EXPORTS OF SCRAP RUBBER BY COUNTRIES.			REEXPORTS OF SCRAP RUBBER.		
Brazil	473,196	\$6,675	To—			To—		
Colombia	3,428	101	EUROPE—			Canada	Pounds.	Value.
Venezuela	635	194	Totals, Europe	8,041	\$4,452		58,574	\$16,032
Totals, South America	477,259	\$6,970	France	8,041	\$4,452			
OCEANIA—			NORTH AMERICA—			Calendar year, 1918...	58,574	\$16,032
British—			Canada	2,923,570	\$283,392	Fiscal year, 1917-18...	74,497	\$16,965
Australia	10,000	\$500	Mexico	318	39	Fiscal year, 1916-17...	1,626	215
New Zealand	83,341	2,796	Totals, North America	2,923,888	\$283,431	Fiscal year, 1915-16...	9,204	734
Totals, Oceania	93,341	\$3,296	Calendar year, 1918...	2,931,929	\$287,883	Fiscal year, 1914-15...	3,483	373
Calendar year, 1918...	8,526,420	\$645,581	Fiscal year, 1917-18...	2,117,257	235,811	Fiscal year, 1913-14...	24,295	2,450
Fiscal year, 1917-18...	13,980,303	1,019,222	Fiscal year, 1916-17...	3,696,661	415,526	Fiscal year, 1912-13...	87,930	10,723
Fiscal year, 1916-17...	20,517,328	1,569,448	Fiscal year, 1915-16...	3,904,715	400,148	Fiscal year, 1911-12...	302,105	28,196
Fiscal year, 1915-16...	16,371,573	1,271,903	Fiscal year, 1914-15...	2,422,091	291,421	Fiscal year, 1910-11...	401,231	43,338
Fiscal year, 1914-15...	11,006,928	726,914	Fiscal year, 1913-14...	6,207,672	598,287	Fiscal year, 1909-10...	61,395	5,373
Fiscal year, 1913-14...	25,958,261	2,063,198	Fiscal year, 1912-13...	7,269,465	880,442	Fiscal year, 1908-09...	38,506	2,093
Fiscal year, 1912-13...	43,385,456	3,709,238	Fiscal year, 1911-12...	7,336,984	780,188	Fiscal year, 1907-08...	21,713	2,943
Fiscal year, 1911-12...	26,293,192	2,095,605	Fiscal year, 1910-11...	7,049,729	723,664	Fiscal year, 1906-07...	105,463	9,444
Fiscal year, 1910-11...	26,948,000	2,334,870	Fiscal year, 1909-10...	6,143,610	578,944			
Fiscal year, 1909-10...	37,364,671	2,998,697	Fiscal year, 1908-09...	4,071,795	402,897	Note.—Details of exports of domestic merchandise by countries for the calendar year 1918, were given on pages 736, 737 of THE INDIA RUBBER WORLD, September 1, 1919.		
Fiscal year, 1908-09...	20,497,695	1,543,267	Fiscal year, 1907-08...	4,255,789	449,727			
Fiscal year, 1907-08...	16,331,035	1,496,822	Fiscal year, 1906-07...	4,756,621	548,695			
Fiscal year, 1906-07...	29,335,193	2,607,987						

Note.—Details of exports of domestic merchandise by countries for the calendar year 1918, were given on pages 736, 737 of THE INDIA RUBBER WORLD, September 1, 1919.

## EXPORTS OF UNITED STATES RUBBER GOODS, CALENDAR YEAR 1918. (BY CUSTOMS DISTRICTS.\*)

FROM—	Belted, Hose, and Packing.	Boots.	Shoes.	Druggists' Rubber Sundries.	Tires.	All Other Manufactures of Rubber.	TOTALS.
	Value.	Pairs.	Value.	Value.	Value.	Value.	VALUE.
Maine and New Hampshire	\$40,791	16,392	\$57,906	\$1,718	\$100,324	\$48,712	\$274,102
Maryland	7,321			469	71,114	21,699	100,603
Massachusetts	7,059	147,988	538,091	36,233	1,110	138,691	818,778
New York	2,324,029	547,703	2,009,169	408,215	7,363,784	2,994,757	15,938,961
Philadelphia	11,581			795	3,070	711	16,157
Virginia					588		588
Porto Rico	590			2,086	7,007	3,829	15,184
Florida	10,929			2	447,409	31,778	522,279
Galveston	302				120	855	1,277
Mobile	1,733	923	769	180	13,033	13,106	4,908
New Orleans	53,164	252	634	7,914	74,281	15,920	228,876
Sabine	17,026			288	4,403	5	22,708
Arizona	72,394	71	350	2,001	120,852	2,550	219,031
El Paso	34,618	6	13	2,123	26,629	815	73,671
San Antonio	145,471	64	398	10,294	455,401	15,547	656,154
Alaska	233	666	2,630		519	310	4,435
Hawaii	3				705	82	1,033
San Francisco	987,009	5,401	15,687	44,597	3,371,767	154,699	5,318,502
Southern California	1,965	17	99	2,215	7,157	68	14,160
Washington	262,221	6,390	20,748	13,125	569,827	33,669	1,068,247
Buffalo	149,156	1,307	5,112	71,902	119,821	31,586	383,209
Dakota	157,420	7,746	27,586	41,748	502,987	26,176	179,204
Duluth and Superior	12,192	340	781	5,492	100,172	730	990,184
Michigan	56,841	34,000	105,885	26,989	348,812	11,226	145,357
Montana and Idaho	2,115			939	5,641		9,774
Ohio	181						392
Rochester							69
St. Lawrence	116,079	1,638	7,528	12,569	651,228	15,468	337,772
Vermont	52,820	1,682	5,730	80,641	123,800	6,523	634,340
Calendar year 1918...	\$4,525,243	772,586	\$2,799,116	\$1,584,747	\$14,511,621	\$755,888	\$30,711,233
Fiscal year, 1917-18...	\$4,578,396	1,559,598	\$4,861,213	913,128	13,977,671	1,130,623	32,540,092
Fiscal year, 1916-17...	3,532,383	600,455	1,483,379	1,716,225	12,330,201	2,547,652	29,875,349
Fiscal year, 1915-16...	2,986,953	720,130	1,619,260	1,046,102	17,936,227	3,003,077	33,881,964
Fiscal year, 1914-15...	1,807,848	318,727	726,765	2,053,560	4,963,270	576,602	13,653,531
Fiscal year, 1913-14...	2,372,887	101,361	279,206	834,289	3,505,267	563,372	11,008,493
Fiscal year, 1912-13...	2,605,551	109,528	274,330	1,163,953	3,943,220	611,458	12,511,548
Boots and Shoes.†							
	Pairs.	Value.					
Fiscal year, 1911-12...	2,545,076	\$1,502,890					
Fiscal year, 1910-11...	3,984,332	2,219,430					
Fiscal year, 1909-10...	3,791,084	1,984,739					
Fiscal year, 1908-09...	2,396,435	1,292,673					
Fiscal year, 1907-08...	3,080,253	1,614,290					
Fiscal year, 1906-07...	2,310,420	1,231,898					
Fiscal year, 1905-06...	2,693,690	1,505,082					
Fiscal year, 1904-05...	2,390,539	1,214,342					
Fiscal year, 1903-04...	2,310,420	1,231,898					
Fiscal year, 1902-03...	2,307,401	1,056,491					
Fiscal year, 1901-02...	2,594,708	1,046,315					
Fiscal year, 1900-01...	1,459,100	724,015					

\*Exports of United States rubber goods, calendar year 1918, by countries, was published in THE INDIA RUBBER WORLD, September 1, 1919, page 737.

†States separately after 1912. †Tires were not specifically reported before 1910-11. †Druggists' rubber sundries were not specifically reported before 1917-18. †These figures are given for the calendar year ended December 31, 1918.



## UNITED KINGDOM RUBBER STATISTICS.

	IMPORTS.			
	August.			
	1918.		1919.	
	Pounds.	Value.	Pounds.	Value.
UNMANUFACTURED—				
Crude rubber:				
From—				
Dutch East Indies.....	173,300	£18,699	1,156,900	£111,293
French West Africa.....	17,900	2,630		
Gold Coast.....	83,800	7,166	12,200	1,174
Other African countries....	14,300	1,203	54,900	4,984
Peru.....			70,200	6,973
Brazil.....			677,300	73,257
British India.....	52,200	5,573	716,200	69,045
Straits Settlements and dependencies, including Labuan.....	1,463,900	165,413	4,595,700	460,442
Federated Malay States....	584,600	58,704	2,779,800	260,110
Ceylon and dependencies....	2,580,200	297,652	1,054,300	104,060
Other countries.....	221,300	25,833	354,600	33,760
Totals.....	5,191,500	£582,873	11,472,100	£1,125,098
Waste and reclaimed rubber..	1,000	£23	253,200	£6,989
Totals, unmanufactured.....	5,192,500	£582,896	11,725,300	£1,132,087
Gutta percha.....				
MANUFACTURED—				
Boots and shoes...dozen pairs	7,420	£15,339	32,904	£52,474
Waterproofed clothing.....				1,392
Automobile tires and tubes..		14,568		239,952
Motorcycle tires and tubes....		2,349		1,246
Bicycle tires and tubes.....		926		7,485
Carriage tires and tubes.....				2,999
Insulated wire.....				901
Totals.....	7,420	£33,177	32,904	£312,449
EXPORTS.				
UNMANUFACTURED—				
Waste and reclaimed rubber..	720,200	£21,158	1,066,800	£24,074
MANUFACTURED—				
Waterproof clothing.....		29,031		213,245
Boots and shoes...dozen pairs	5,417	6,987	16,608	34,442
Insulated wire.....		8,654		102,511
Submarine cables.....		34,223		75,983
Carriage tires and tubes.....		9,827		19,911
Automobile tires and tubes....		58,221		252,150
Motorcycle tires and tubes....		13,470		25,130
Bicycle tires and tubes.....		31,255		181,037
Other rubber manufactures....		118,951		272,410
Totals.....	725,617	£331,779	1,103,408	£1,198,893
EXPORTS—COLONIAL AND FOREIGN.				
UNMANUFACTURED—				
Crude rubber:				
To Belgium.....			2,506,500	£189,465
France.....	1,569,400	£169,936	2,070,900	195,419
Italy.....	721,200	78,315	1,511,800	164,033
Russia.....				
United States.....	44,500	5,165	771,700	65,227
Other countries.....	272,900	27,746	4,107,500	401,886
Totals.....	2,608,000	£281,162	10,968,400	£1,016,030
Waste and reclaimed rubber..			45,000	2,022
Gutta percha.....	900	223	90,500	16,592
MANUFACTURED—				
Boots and shoes...dozen pairs	1	£12	643	£1,462
Insulated wire.....				42
Automobile tires and tubes....		5,978		7,798
Motorcycle tires and tubes....				161
Bicycle tires and tubes.....		4,535		84
Carriage tires and tubes.....				371
Totals.....	1	£10,525	643	£9,918

## RUBBER STATISTICS FOR THE DOMINION OF CANADA.

## IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

	July.			
	1918.		1919.	
	Pounds.	Value.	Pounds.	Value.
UNMANUFACTURED—free				
Rubber, gutta percha, etc.:				
From United Kingdom....	86,874	\$38,450	242,991	\$108,856
United States.....	436,362	198,176	579,034	226,144
British East Indies:				
Ceylon.....	92,543	46,119		
Straits Settlements.....	1,234,282	476,765	1,195,633	520,046
Other countries.....	5,980	3,514		
Totals.....	1,856,041	\$763,024	2,017,658	\$855,046
Rubber, recovered.....	191,277	\$33,065	492,265	\$72,995
Hard rubber sheets and rods..	825	867	14,375	5,347
Hard rubber tubes.....		14,231		1,995
Rubber, powdered, and rubber or gutta percha scrap.....	411,918	31,486	24,305	856
Rubber thread, not covered..	2,588	3,822	3,253	4,553
Rubber substitute.....	91,381	19,384	26,437	4,315
Totals.....	697,989	\$102,855	560,635	\$89,461
Chicle.....	49,018	\$34,075	109,955	\$75,452
MANUFACTURED—dutiable:				
Boots and shoes.....		\$15,176		\$12,696
Waterproofed clothing.....		20,002		19,004
Belting, hose and packing....		39,105		36,823
Gloves and hot-water bottles..		(1)		2,708
Tires.....		101,499		162,652
Other manufactures.....		161,585		69,506
Totals.....		\$337,367		\$303,389

<sup>1</sup> Included in "Other manufactures."

## EXPORTS OF DOMESTIC AND FOREIGN RUBBER GOODS.

	1918.		1919.	
	Produce of Canada. Value.	Reexports of Foreign Goods. Value.	Produce of Canada. Value.	Reexports of Foreign Goods. Value.
UNMANUFACTURED—				
Crude and waste rubber.....				\$191
Waste.....	\$2,385		37,790	
MANUFACTURED—				
Hose.....	24,103		7,823	
Boots and shoes.....	37,321	437	169,462	222
Clothing.....	3,659	6,315	538	186
Tires.....	73,089	3,596	666,805	8,824
Belting.....	2		2,085	
All other—n. o. p.....	9,384	4,974	18,930	1,631
Total.....	\$149,950	\$15,322	\$903,433	\$11,054
Chicle.....	\$85,849		\$73,484	

## THE MARKET FOR RUBBER SCRAP.

## NEW YORK.

THERE has been hardly any change in the rubber scrap market since a month ago. Manufacturers have been buying in small lots, the interest being centered around boots and shoes and standard auto tires.

Price changes in the list since last month show a quarter of a cent advance in boots and shoes, a decline of one cent in standard white auto tires and three-eighths in solid truck tires, otherwise the list is unchanged.

## QUOTATIONS FOR CARLOAD LOTS DELIVERED.

OCTOBER 25, 1919.

Prices subject to change without notice.

<b>BOOTS AND SHOES:</b>			
Arctic tops.....	lb.	.01	@
Boots and shoes.....	lb.	.08 3/4	@
Trimmed arctic.....	lb.	.06 1/2	@
Untrimmed arctic.....	lb.	.05 3/4	@
<b>HARD RUBBER:</b>			
Battery jars, black compound.....	lb.	.01	@
No. 1, bright fracture.....	lb.	.23	@
<b>INNER TUBES:</b>			
No. 1, old packing.....	lb.	.19	@
No. 2.....	lb.	.10 3/4	@
Red.....	lb.	.10	@
<b>MECHANICALS:</b>			
Black scrap, mixed, No. 1.....	lb.	.03 1/2	@
No. 2.....	lb.	.03	@
Car springs.....	lb.	.03 1/2	@
Heels.....	lb.	.03	@
Horse-shoe pads.....	lb.	.03	@
Horse, air brake.....	lb.	.04 1/2	@
fire, cotton lined.....	lb.	.01 1/2	@
garden.....	lb.	.01 1/2	@
Insulated wire stripping, free from fiber.....	lb.	.03 1/2	@
Matting.....	lb.	.01 1/2	@
Red packing.....	lb.	.05 1/2	@
Red scrap, No. 1.....	lb.	.09	@
No. 2.....	lb.	.06 3/4	@
	lb.	.10	@
	lb.	.08	@
<b>TIRES:</b>			
<b>PNEUMATIC—</b>			
Auto peelings, No. 1.....	lb.	.07	@
No. 2.....	lb.	.05	@
Bicycle.....	lb.	.03	@
Standard white auto.....	lb.	.03 1/4	@
Standard mixed auto.....	lb.	.04	@
Stripped, unguaranteed.....	lb.	.03	@
White, G. & G., M. & W., and U. S.....	lb.	.05	@
<b>SOLID—</b>			
Carriage.....	lb.	.04	@
Irony.....	lb.	.01	@
Truck.....	lb.	.03 1/2	@

## THE MARKET FOR COTTON AND OTHER FABRICS.

## NEW YORK.

IN OCTOBER after hovering around 32 cents for a time with sharp fluctuations, the spot price for middling uplands cotton advanced steadily and reached 36.60 cents on October 24. Speculation was based on the conviction that the crop would be even shorter than the government estimate and that the quality would be poor. Rain and bad weather spoiled the cotton and interfered with picking the cotton in season, while the insect pests abounded, the boll weevil appearing further north than ever before. The

demand is very great and the prospect is that prices will be extremely high.

**EGYPTIAN COTTON.** The supply of Egyptian cotton has been larger than was expected for the crop was good, though the staple was shorter than usual in many cases, owing to the native trick of cutting off the water in order to force the boll to open early. The high price offered offset in some degree English competition.

From the first to the middle of October, prices advanced sharply but later in the month the market fell off, medium Sakelarides bring quoted 58½ cents and medium uppers at 56 cents.

**AMERICAN-EGYPTIAN.** Arizona has yielded the largest crop yet produced, but this, combined with imported Egyptian, will not make up for the deficiency due to the shortage of Sea Island cotton. A fair amount of this cotton has been marketed and the demand, although somewhat restricted, continues to take care of the output of all gins. Prices have held steadily around 68 and 70 cents for the best grades.

**SEA ISLAND COTTON.** Sea Island cotton conditions show no change, with an exceedingly small crop in prospect. The government estimate of 15,000 bales will probably be reduced at the end of the year. Good grades are demanding very high prices. Probably a good grade of average extra choice could be bought for 70 cents.

**TIRE FABRICS.** The market is very strong. Increased production of tires and the condition of the cotton crop, with the increased shortage in long staple, make it impossible for the mills

to meet the demand. The product is sold substantially to the end of 1920.

**OTHER FABRICS.** A like excess of demand over supply prevails with other cotton fabrics. For waterproofing materials, for sheetings, for hose and belting, for drills and ducks it is the same story of goods very scarce and deliveries for next year only. Asbestos cloth and yarns are hard to get; there are almost no imports from England and none from Germany.

#### NEW YORK QUOTATIONS.

OCTOBER 25, 1919.

Prices subject to change without notice.

#### ASBESTOS CLOTH:

Brake lining, 2½ lbs. sq. yd., brass or copper insertion	lb.	\$0.85	@
2½ lbs. sq. yd., brass or copper insertion	lb.	.90	@

#### BURLAPS:

32-7-ounce	100 yards	*12.50	@
32-8-ounce		*13.50	@
40-7½-ounce		*14.15	@
40-8-ounce		*14.25	@
40-10-ounce		*18.00	@
45-7½-ounce		*16.85	@
45-8-ounce		*17.00	@
45-9½-ounce		None	@
48-10-ounce		*20.00	@

#### DRILLS:

38-inch 2.00-yard	yard	.37½	@
40-inch 2.47-yard		.30¼	@
52-inch 1.90-yard		.48¼	@
52-inch 1.95-yard		.48¼	@
60-inch 1.52-yard		.62	@

#### DUCK:

CARRIAGE CLOTH:			
38-inch 2.00-yard enameling duck	yard	.37½	@
38-inch 1.74-yard		.43	@
72-inch 16.66-ounce		.92½	@
72-inch 17.21-ounce		.96¼	@

#### MECHANICAL:

Hose	lb.	.65	@
Belting		.65	@

#### HOLLANDS, 40-INCH:

Acme	yard	.30	@
Endurance		.38	@
Penn		.46	@

#### OSNABURGS:

40-inch 2.35-yard	yard	.29¼	@
40-inch 2.48-yard		.28¼	@
37½-inch 2.42-yard		.20	@

#### RAINCOAT FABRICS:

COTTON:			
Bombazine 64 x 60 water-repellent	yard	.23	@
60 x 48 not water-repellent		.20	@
Cashmeres, cotton and wool, 36-inch, tan		.95	@
Twills 64 x 72		.43	@
64 x 102		.45	@
Twill, mercerized, 36-inch		.45	@
Tweed		.60	@
Printed		.24	@
Plaids 60 x 48		.21	@
56 x 44		.20	@
Repp		.45	@
Surface prints 60 x 48		.21½	@
64 x 60		.24	@

#### IMPORTED WOOLEN FABRICS SPECIALLY PREPARED

FOR RUBBERIZING—PLAIN AND FANCIES:			
63-inch, 3¼ to 7½ ounces	yard	1.30	@ 3.50
36-inch, 2¼ to 5 ounces		.75	@ 1.90

#### IMPORTED PLAID LINING (UNION AND COTTON):

63-inch, 2 to 4 ounces	yard	.90	@ 1.85
36-inch, 2 to 4 ounces		.55	@ 1.10

#### DOMESTIC WORSTED FABRICS:

36-inch, 4½ to 8 ounces	yard	.65	@ 1.50
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#### DOMESTIC WOVEN PLAID LININGS (COTTON):

36-inch, 3¼ to 5 ounces		.21	@ .32
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#### SHEETINGS:

40-inch, 2.35-yard	yard	.30¼	@
40-inch, 2.50-yard		.28¼	@
40-inch, 2.70-yard		.26¼	@
40-inch, 2.85-yard		.25	@
40-inch, 3.15-yard		.28	@
40-inch, 3.60-yard		.24	@

#### JACKET:

Delaware	yard	.30	@
Schuykill		.37	@

#### SILKS:

Canton, 38-inch	yard	.57½	@
Schappe, 36-inch		.75	@

# TIRE FABRICS

## JENCKES SPINNING COMPANY

### PAWTUCKET RHODE ISLAND

AKRON OFFICE  
407 Peoples Savings & Trust  
Co. Building.

## TIRE FABRICS:

17½-ounce Sea Island, combed.....	pound	1.60	@
17½-ounce Egyptian, combed.....		1.40	@
17½-ounce Egyptian, ca <sup>2</sup> -ed.....		1.30	@
17½-ounce, Peelers, combed.....		1.42	@
17½-ounce Peelers, ca <sup>2</sup> -ed.....		1.00	@

\*Nominal.

## SEA ISLAND CROP MOVEMENT.

	Receipts.	
	1919-20.	1918-19.
Stock on hand, August 1, 1919:		
FROM AUGUST 1, 1919, TO OCTOBER 31, 1919.		
Savannah, 4,901; Charleston, 90.....	bales 4,991	15,764
Received at Savannah (gross).....	1,793	2,304
Received at Charleston.....	591	1,680
Received at Jacksonville.....	2,907	2,110
Totals.....	10,282	21,858
Less exports.....	5,474	9,938
Stock October 31, 1919:		
Savannah 4,215; Charleston 593.....	4,808	11,920
Crop in sight at all ports to date.....	5,291	6,094

From--	To				Total
	Great Britain.	Continent.	North Mills.	South Mills.	
Savannah.....		238	1,863	378	2,479
Charleston.....			88		88
Jacksonville.....			2,907		2,907
Total.....		238	4,858	378	5,474
1918-19.....	144		9,144	650	9,938
	†144	*238	†4,286	†272	†4,464

\*Increase. †Decrease.

(Compiled by John Malloch &amp; Co., Savannah, Georgia.)

## THE MARKET FOR CHEMICALS AND COMPOUNDING INGREDIENTS.

## NEW YORK.

IN COMMON with other important industries the rubber trade is suffering from the abnormal freight and labor conditions prevalent. In New York movement of all water-borne freight has been stopped for weeks. These conditions have stimulated demand for spot stocks and raised prices. In some lines production is very much oversold and deliveries postponed.

**ANILINE OIL.** Almost impossible to obtain at present from spot stock. Futures are booked so far that manufacturers cannot name a price or promise deliveries a month or six weeks ahead.

**BARYTES.** Stocks very low owing to shipments being tied up by harbor strikes.

**BENZOL.** Spot stock at great premium, because supply in quantities is practically off the market on account of the steel strike.

**GOLDEN ANTIMONY.** In great demand with supply very short.

**MAGNESIA, HEAVY CALCINED.** Stocks short, manufacturers oversold and in some cases closed down because raw supplies cannot be obtained owing to freight and labor troubles.

**MONTAN WAX.** The first shipments since five years ago have arrived at this port and are now available.

**SULPHUR.** General advance in all grades since October 1.

**WHITINGS.** Held at a premium because stocks are very low as shipments are tied up by the longshoremen's strike.

## NEW YORK QUOTATIONS.

OCTOBER 25, 1919.

Subject to change without notice.

## ACCELERATORS, ORGANIC.

Accelerator, N. C. C.....	lb.	\$0.50	@
Accelerene, New York.....	lb.	4.75	@
Accelemaal.....	lb.	.55	@
Aldehyde ammonia crystals.....	lb.	1.00	@ 1.25
Aniline oil.....	lb.	.32	@ .33½
Excellerex.....	lb.	.55	@ .70
Hexamethylene tetramine (powdered).....	lb.	.93	@ 1.05

Paraphenylenediamine.....	lb.	\$2.50	@ 2.75
Thiocarbamide.....	lb.	.55	@ .65

## ACCELERATORS, INORGANIC.

Lead, dry red (bbis.).....	lb.	.10½	@
sublimed blue (bbis.).....	lb.	.08½	@
sublimed white (bbis.).....	lb.	.08½	@
white, basic carbonate (bbis.).....	lb.	.09	@
Lime, flour.....	lb.	.02	@ .02½
Litharge, domestic.....	lb.	.09½	@
sublimed.....	lb.	.10	@
Magnesium, carbonate.....	lb.	.12½	@
calcined heavy (Thistle).....	lb.	.11	@
light (Manhattan).....	lb.	.35	@
Magnesium oxide.....	lb.	.65	@
Magnesite.....	lb.	.04	@

## ACIDS.

Acetic, 28 per cent (bbis.).....	lb.	.03	@
glacial, 99 per cent (carboys).....	lb.	.12	@
Cresylic (97% straw color).....	gal.	.77	@ .80
(95% dark).....	gal.	.72	@ .75
Muriatic, 20 degrees.....	cu. ft.	1.75	@ 2.00
Nitric, 36 degrees.....	lb.	.06	@ .06½
Sulphuric, 66 degrees.....	ton	19.20	@

## ALKALIES.

Caustic soda, 76 per cent (bbis.).....	lb.	.05	@
Soda ash (bbis.).....	lb.	.03½	@

## COLORS.

<b>Black:</b>			
Bone, powdered.....	lb.	.05	@
granulated.....	lb.	.09	@
Carbon black (sacks, factory).....	lb.	.13	@
Drop.....	lb.	.06	@ .13
Ivory black.....	lb.	.16	@ .30
Lampblack.....	lb.	.15	@
Oil soluble aniline.....	lb.	1.25	@
Rubber black.....	lb.	.07½	@
<b>Blue:</b>			
Cobalt.....	lb.	.25	@ .35
Prussian.....	lb.	.65	@ .75
Ultramarine.....	lb.	.18	@ .40
<b>Brown:</b>			
Iron oxide.....	lb.	.03	@ .03½
Sienna, Italian, raw and burnt.....	lb.	.05½	@ .12
Umber, Turkey, raw and burnt.....	lb.	.05	@ .06
Vandyke.....	lb.	.02½	@ .03½
<b>Green:</b>			
Chrome, light.....	lb.	.35	@ .40
medium.....	lb.	.40	@ .50
dark.....	lb.	.50	@ .60
commercial.....	lb.	.07	@ .15
Oxide of chromium (casks).....	lb.	.75	@ .85
<b>Red:</b>			
Antimony, crimson, sulphuret of (casks).....	lb.	.48	@ .55
Antimony, golden sulphuret of (casks).....	lb.	.35	@
golden sulphuret (States).....	lb.	.28	@
red sulphuret (States).....	lb.	.25	@
vermillion sulphuret.....	lb.	.55	@
Arsenic, red sulphide.....	lb.	.22	@
Indian.....	lb.	.08½	@
Toluidine toner.....	lb.	3.50	@
Iron oxide, reduced grades.....	lb.	.14	@
pure bright.....	lb.	.16	@
Spanish.....	lb.	.03½	@
Venetian.....	lb.	.02	@ .04½
Oil soluble aniline, red.....	lb.	2.00	@
orange.....	lb.	1.75	@
Oximony.....	lb.	.18	@
Vermilion, English, pale, medium, dark.....	lb.	1.55	@ 1.65
<b>White:</b>			
Aluminum bronze, C. P.....	lb.	.55	@
superior.....	lb.	.60	@
Lithopone, domestic.....	lb.	*.07	@ .07½
Ponolith (carloads, factory).....	lb.	.07	@ .07½
Rubber-makers' white.....	lb.	*.06½	@ .06¾
Zinc oxide, Horsehead (less carload, factory):			
"XX red".....	lb.	.09	@ .09½
"Special".....	lb.	.09½	@ .09¾
French process, red real.....	lb.	.09½	@ .09¾
green seal.....	lb.	.10½	@ .10¾
white seal.....	lb.	.11½	@ .11¾
(States).....	lb.	.08½	@
Azo, ZZZ, lead free (less carload factory).....	lb.	.09½	@
ZZ, under 5% leaded (less carload factory).....	lb.	.08½	@
Z, 8-10% leaded (less carload factory).....	lb.	.08½	@
<b>Yellow:</b>			
Cadmium, sulphide, yellow, light, orange.....	lb.	2.00	@
red.....	lb.	1.85	@
Chrome, light and medium.....	lb.	.27	@
Ochre, domestic.....	lb.	.2½	@ .03½
imported.....	lb.	.05	@ .06½
Oil, soluble aniline.....	lb.	2.00	@
Zinc chromate.....	lb.	.40	@



## COMPOUNDING INGREDIENTS.

Aluminum flake	ton	@	
Aluminum oxide	lb.	*.18	@
Ammonia carbonate, powdered	lb.	.13 1/4	@ .14
Asbestine (carloads)	ton	25.00	@
Asbestos (bags)	ton	35.00	@
Avocals compound	lb.	.16	@
Barium carbonate, precipitated	ton	65.00	@
sulphide, precipitated	ton	.07	@
dust	lb.	.03 1/4	@
Barytes, pure white	ton	31.00	@ 33.00
Barytes, off color	ton	18.00	@ 20.00
uniform floated	ton	31.00	@ 33.00
Basofor	lb.	.04	@
Blanc fixe	lb.	.04	@
Bone ash	lb.	.05	@
Chalk, precipitated, extra light	lb.	.05	@ .05 1/4
precipitated, heavy	lb.	.04	@ .04 1/4
China clay, domestic	ton	8.50	@ 20.00
imported	ton	18.00	@ 23.50
Shawnee	ton	15.00	@
Cork flour	lb.	.53	@
Cotton linters, clean mill run, f. o. b. factory	lb.	.04	@
Fossil flour (powdered)	ton	60.00	@
Diatomite	ton	65.00	@
Glue, high grade	lb.	.35	@ .40
medium	lb.	.16	@ .28
low grade	lb.	.12	@ .15
Graphite, flake (400-pound bbl.)	lb.	.10	@ .30
amorphous	lb.	.04	@ .08
Ground glass FF. (bbls.)	ton	.03	@
Infusorial earth (powdered)	ton	60.00	@
(bolted)	ton	65.00	@
Liquid rubber	lb.	.16	@
Mica, powdered	lb.	.03 1/4	@ .05
Fumice stone, powdered (bbl.)	lb.	.05	@
Rotten stone, powdered	lb.	.02 1/4	@ .04 1/4
Rub-R-Glu	lb.	*.20	@ .25
Silex (silica)	ton	22.00	@ 40.00
S starch, powdered corn (carload, bbls.)	cwt.	5.84	@
(carload, bags)	cwt.	5.62	@
Talc, powdered soapstone	ton	15.50	@ 17.50
Tripoli earth, air-floated	ton	25.00	@
Tyre-lith	ton	85.00	@
Whiting, Alba (carloads)	cwt.	.80	@ .90
Columbia	cwt.	.80	@
commercial	cwt.	1.25	@
English cliffstone	cwt.	2.00	@
gilders	cwt.	1.35	@
Paris, white, American	cwt.	1.75	@
Quaker	cwt.	.70	@ .80
Wood pulp, imported	lb.	.03 1/4	@
Wood flour, American	ton	36.00	@ 38.00

## MINERAL RUBBER.

Gilsonite	ton	57.50	@
Genasco (carloads, factory)	ton	55.00	@
(less carloads, factory)	ton	57.00	@
Hard hydrocarbon	ton	30.00	@
K-X	ton	*120.00	@
K. M. R.	ton	*40.00	@ 60.00
M. R. X.	ton	100.00	@
Pioneer, carload, factory	ton	50.00	@
less carload, factory	ton	55.00	@
Raven M. R.	ton	50	@ .70
Refined Elaterite	ton	175.00	@
Richmond	ton	75.00	@
No. 64	ton	45.00	@
318/320 M. P. hydrocarbon	ton	50.00	@
Robertson, M. R. Special (carloads, factory)	ton	80.00	@
M. R. (carloads, factory)	ton	55.00	@ 60.00
Rubpron (carloads, factory)	ton	50.00	@
(less car, factory)	ton	60.00	@
Walpole rubber flux (factory)	lb.	.05	@

## OILS.

Castor, No. 1, U. S. P.	lb.	.22	@
No. 3, U. S. P.	lb.	.20	@
Corn, refined Argo	cwt.	23.76	@
Cotton	lb.	.23	@
Glycerine (98 per cent)	lb.	.21	@
Glycerole	lb.	.35	@
Linseed, raw (carloads)	gal.	1.72	@
Linseed compound	gal.	*.85	@
Palm (Niger)	lb.	.17	@
Peanut	lb.	.21 1/4	@
Petrolatum	lb.	.06 1/4	@
Petroleum grease	lb.	.04 3/4	@
Pine, steam distilled	gal.	.90	@ 1.25
Rapeseed, refined	gal.	1.60	@
blown	lb.	.22	@
Rosin	bbl.	18.00	@
Soya bean	lb.	.18	@
Tar	gal.	.35	@ .40

## RESINS AND PITCHES.

Cantella gum	lb.	.55	@
Tar, retort	bbl.	14.75	@ 15.00
kiln	bbl.	14.25	@ 14.75
Pitch, Burgundy	lb.	.09	@
coal tar	lb.	.03 1/4	@
pine tar	lb.	.03 1/4	@
ponto	lb.	.14	@

Rosin	bbl.	None	
granulated	lb.	None	
fused	lb.	None	
Rosin, K	bbl.	19.50	@
Shellac, fine orange	lb.	1.25	@ 1.35

## SOLVENTS.

Acetone (98.99 per cent. drums)	lb.	.15	@
methyl (drums)	gal.	1.15	@
Benzol, water white	gal.	.25	@ .28
Beta-naphthol, resublimed	lb.	1.00	@
ordinary grade	lb.	.48	@
Carbon bisulphide (drums)	lb.	.05 1/4	@ .06 1/4
tetrachloride (drums)	lb.	.10	@ .12
Naphtha, motor gasoline (steel bbls.)	gal.	.24 1/4	@
73 @ 76 degrees (steel bbls.)	gal.	None	
68 @ 70 degrees (steel bbls.)	gal.	None	
Solvent	gal.	.20	@
V. M. & P. (steel bbls.)	gal.	.23 1/4	@
Toluol, pure	gal.	.26	@ .30
Turpentine, spirits	gal.	1.71	@
wood	gal.	1.65	@
Osmaco reducer	gal.	.30	@
Nylol, pure	gal.	.35	@ .40
commercial	gal.	.30	@ .35

## SUBSTITUTES.

Black	lb.	.10 1/4	@ .19
White	lb.	.12	@ .23
Brown	lb.	.15	@ .22
Brown factice	lb.	.09	@ .21
White factice	lb.	.11	@ .22
Paragol sift and medium (carloads)	cwt.	18.50	@
hard	cwt.	18.08	@

## VULCANIZING INGREDIENTS.

Lead, black hyposulphite (Black Hypo)	lb.	.52	@ .56
Orange mineral, domestic	lb.	.13 1/4	@
Sulphur chloride (drums)	lb.	.06	@ .06 1/4
Brown factice	cwt.	3.15	@
Sulphur, flour, Brooklyn brand (carloads)	cwt.	3.20	@
pure soft (carloads)	cwt.	3.20	@
superfine (carloads, factory)	cwt.	2.50	@

(See also Colors—Antimony.)

## WAXES.

Wax, beeswax, white	lb.	.65	@ .68
ceresin, white	lb.	.15	@ .18
carnauba	lb.	.47	@ .48
ozokerite, black	lb.	.60	@
green	lb.	.75	@
Montan	lb.	.33	@
substitute	lb.	.20	@ .30
paraffine, refined 118/120 m. p. (cases)	lb.	.07 1/4	@
123/125 m. p. (cases)	lb.	.07 1/4	@
128/130 m. p. (cases)	lb.	.08 3/4	@

\*Nominal.

## HEVEA IN SOUTHERN NIGERIA.

In southern Nigeria the *Hevea brasiliensis* seems to have become acclimatized. According to the "Nigeria Gazette," 300 five-year-old trees in the Sapele district yielded an average of a pound and a half of dry rubber in 1911. In 1912 four-year-old trees at Ebrite gave an average of seven pounds, while from September, 1916, to December, 1917, 1,000 eleven-year-old trees at Agege yielded 4,337 pounds.



SPECIAL TRAIN OF FIFTY-THREE CARLOADS CONTAINING 8,435,000 POUNDS OF CRUDE RUBBER FORWARDED OVER THE LEHIGH VALLEY RAILROAD TO THE GOODYEAR TIRE & RUBBER CO., AKRON, OHIO, BY THE WILLIAMS SUPPLY AGENCY, INC., NEW YORK CITY.



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